The Builder.

No. CCXV.

SATURDAY, MARCH 20, 1847.

THE recent discussions at the Institute of Architects, on the arrangement of buildings with a view to the transmission of sound, afforded striking evidence of the want of positive information on the subject, which still exists, and leads constantly to annoyances and difficulties. Considerable interest was exhibited on the occasions in question; instances of the inconvenience resulting from the indefinite state of our knowledge in respect of sound were given, and of the great importance of improving it. Since the appearance of our reports of those discussions, we have received statements of various buildings (churches and large rooms), wherein the speaker or music, as the case may be, cannot be heard, with inquiries for advice,—shewing still further the extent of the demand for some effort to lay down accurate rules.

The first step towards effecting this, would be a collection of facts, obtained by rigorous investigation of a number of buildings; and we would suggest to the Institute that they should endeavour to organize a qualified committee forthwith, to commence this investigation. If this were done, and the inquiry were properly conducted, good could not fail to result. Nothing, however, must be taken for granted. No dependence must be placed on reports that this is a good room or this a bad room for hearing; the fact must be ascertained personally; and the dimensions, shape, materials, mode of ventilating, and other circumstances, be then carefully recorded and weighed. "There is no point of natural science,"—said Mr. Wilson Croker to a committee of the House of Commons, appointed in 1831 to inquire as to the erection of new Houses of Parliament,—"that has been brought to so little practical certainty as that which is called *catacoustics*, or the doctrine of reflected sound: and *facts therefore are the more precious.*" Facts are what we need; a body of carefully collected and well-arranged facts,—the result of which would be, SCIENCE.

It is distressing to read the contradictory opinions, which were given in evidence to this committee by architects and others of high standing. The circular is the best form; turn over a page and it is the worst.* The ceiling ought to be perfectly smooth and flat; no, it should be coved, and quite smooth; no, again, the surface of it should be broken up. You must have projections and breaks, says one, to prevent echo; "the reason that so many buildings fail," says another, "is by large projections and angles internally, which break the line of conduction, and reflect the sound in various directions, not co-operating with, but thwarting each other; or large and deep recesses in the walls and ceilings sometimes swallow up the sound or embay it." There is, nevertheless, something to be learnt from the evidence in question; and an abstract of all in it that relates to sound would be useful as well as curious.

The circumstance that at this moment, there is no one able to predicate with certainty the effect of any proposed building in respect of sound seems extraordinary, but is nevertheless undeniable; no one even pretends that he can do so, but all confess that the question is most difficult, and has not yet been properly investigated. Surely it is time to attempt it.

Three important buildings are now on the eve of completion, the value of which will depend *entirely* on their excellence in respect of the transmission of sound,—we mean the new House of Lords, St. George's Hall, Liverpool, and the Opera House, Covent Garden. In two, at all events, of these buildings, great consideration has been given to the question; nevertheless the issue is quite doubtful. We wait with some anxiety the resolution of the doubt. The ceiling of the new Opera House is domical, consisting of two ellipses, and is formed wholly of thin battens nailed to fir ribs,—an admirable piece of workmanship by the way,—apparently better adapted for music than for speaking.

The best form of ceilings is a question on which there is considerable difference of opinion. We have before us the notes of a lecture on acoustics delivered by Mr. Robert Addams (who has given attention to the subject), some years ago. Our readers will probably think the following portion of them worth printing:—He said, "If we looked to our churches, chapels, and school-rooms, almost all were bad; *the curved form of the ceilings reflected the voice of the speaker to a certain point*, and while one person was overpowered with sound, the majority of the congregation could not hear a word distinctly; and he was not a little apprehensive, that from the want of proceeding on scientific principles, many new buildings would be spoiled in the same manner. The form of room that was adapted for music would be bad for public speaking, and *vice versa;* therefore, architects should never attempt to combine the two objects in the same building. They required a certain degree of echo for music; but the great effort should be to get rid of all reverberation in a room intended for public speaking. Having heard his objections to public buildings as they were at present constructed, they would naturally feel disposed to ask the form of room he was disposed to recommend. Now, he was not quite prepared to tell them the precise form that he considered best; but he would recommend the avoidance of apartments of a circular form by all means, as the audience would be overwhelmed by the reverberation of the speaker's voice; the elliptical form produced still greater evils; and, in fact, whether the apartment were intended for music or speaking, it should be divested of all curvature. Neither would he have semicircular rooms, although, if built in this shape, they might be improved, if not effectually cured, by ornamenting the walls with columns and pilasters, by furnishing the windows with drapery, by covering the floor and benches with drugget or carpeting; and if that would not do, he would dissect the ceiling with cross beams, and introduce figures and ornaments in its decoration, so that the sound of the speaker's voice would be broken into a diversity of reverberations. Should all this fail in remedying the inconvenience, he would wainscot the room with wood, from the top to the bottom, by which the number of the echoes would be multiplied *ad infinitum* (?) The Royal Institution was built in a curved form, and would be very bad were it not that it was lined with wood, and furnished in other respects so as to destroy the reverberations which he had described."

Alberti says,—"I will not omit one observation (speaking of the Senate-house), namely, that no place where we are to hear the voices of persons either speaking, singing, or disputing, should ever be vaulted, because such roofs confound the voice with echoes; whereas a flat ceiling, made of timbers, renders the sound more clear and distinct."

And yet the curved form of ceiling is found in some of the best theatres and rooms for hearing in. At her Majesty's Theatre, when rebuilt by Novosielski, great care was taken to avoid projections on the surface of the ceiling, and on every other part,—the whole was kept flat to give as little interruption as possible to the progress of sound; and this is certainly one of the best theatres in Europe for music.* Immediately in the centre of the pit, at a certain distance from the back, there is a very distinct, and, at the same time, disagreeable echo, and you may, in one place here, hear the prompter from his box in the centre of the stage as plainly as you can the singers. We know of no other part of the house, however, where the sound seems in any way confused or interfered with.

The fact is, there are many things which concur to produce a bad or good hearing apartment. Attention to two or three points is not sufficient; and in cases where the more prominent requirements have been attended to without good effect, we should perhaps find on strict investigation a reason for the failure, and so remove what might seem to be a contradiction.

Foremost amongst the less obvious circumstances affecting the conveyance of sounds in a building is the mode of ventilation employed,—the manner in which air is brought in and taken out. The state of the atmosphere in a room will alone cause great difficulty; as may be proved by striking a glass filled with water, and one filled with carbonic acid gas. In the latter case, a dead and leaden sound alone is produced; and the wet blanket, to speak literally, thrown on a singer's exertions by the breath of the audience in an ill-constructed apartment, becomes understandable.

The effect of two or more reciprocating bodies upon a sound is curious. An experiment occurs to us which shewed it forcibly. It was for the purpose of demonstrating that when the vibrating body, which sets the air in motion, is placed between two reciprocating bodies in such a manner, that the vibrations of the air from one of them shall cross the vibrations of the air from the other at *right angles*, the sound ceases; and, on the other hand, that when two such reciprocating bodies are placed so that their vibrations mingle in *right lines*, the

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* *Sound.*—In any alteration of the old house, or in the erection of a new one, is it not probable that you will be more successful in having a good sound by having *a circular end* than by having square sides? Yes, you will find that in the Olympic Theatre at Vicenza there is a circular end; so had all the ancient theatres, both Greek and Roman.—Concluded that shape to be peculiarly favourable to hearing.

Smirke.—Have you considered whether a complete circular shape, a segment being cut off for the strangers' gallery, immediately behind where the speaker would be placed, as likely to be favourable for hearing? * * I think if the circular form were preserved behind the speaker, above the proposed seats, it would be a very inconvenient room for hearing; there would be in all probability such a reverberation of the voice, that it would be scarcely possible to hear with distinctness; if the circle is not preserved, but a large segment is taken off by a straight wall behind the speaker, it would still be liable to some of the objections which I have generally observed apply to semi-circular rooms; it would be extremely difficult to prevent the reverberation of sound, and especially when there were but few persons in the room.

* The theatre at Parma is, without exception, the largest in Europe. Addison, in his remarks on several parts of Italy, says, "It is so admirably contrived, that from the very depth of the stage the lowest sound may be heard distinctly in the farthest part of the audience, as in a whispering place." Dr. Moore, in his travels in Italy, observes "that a whisper is heard all over this immense house." This theatre is surrounded on the inside with columns. It is remarkable that Pietro Paulo, in his plan, shows thirteen intercolumniations; Mr. Saunders fifteen; and Pano seventeen; consequently the lengths of the theatre in these plans differ. The last of these writers states that he measured it himself, and remarks that there are seventeen intercolumniations. The theatres at Vicenza and Bordeaux are also surrounded with columns in the same manner, and are stated to be favourable to the progress of sound; how these ornaments in relief will be reconciled with the necessity of a smooth surface, remains to be explained."—Ware.

sound reaches its maximum. It was shewn by two ordinary drinking glasses, each of which emitted the note C when a tuning-fork was applied to them. When one was held horizontally and the other perpendicularly, with the lips of each in contact, and a tuning-fork was placed at the intersection, *the sound ceased*, and when they were held perpendicularly to the tuning-fork (mouth over mouth), the sound was doubled. This may involve the reason why some cross-churches are very bad for hearing in.*

We repeat our suggestion that a committee should be appointed forthwith to investigate a number of buildings known to be good or bad in respect of sound. "Were this made a subject of inquiry, in the construction of all public buildings," says Dr. Reid, "our orators would not be so often exhausted by the mere mechanical endeavours which they are at times compelled to make when addressing the most silent and listening assembly; nor would the audience, in their turn, be compelled to exert an exhausting attention, in their anxiety to catch the mere verbal expression of the individual who is addressing them. A few examples would soon make most people aware of the difference between mere noisy prolonged reverberation and a sustained purity of intonation. And when the latter has been successfully attained, the human voice can then portray itself in all its commanding eloquence; its full expression dwells upon the ear; no jarring discord mars its harmony. It swells and dies away like the vast tidal wave which moves upon the ocean, and not like the noisy breakers, whose returning surge produces nothing but the most tumultuous and confused agitation upon its unequal shores." Exeter Hall has been spoken of as a very bad room, and the committee could not do better than commence their examination there, as the public might then possibly derive some immediate advantage from the remedies that might be tried.

* When waves of sound are excited simultaneously in different places, each advances, according to the laws of undulatory motion, independently of the other. Where they meet, they cross each other's path, and after this intersection each pursues its course unaltered. From this circumstance we may comprehend how several sounds and notes may be heard at once. It is only at their points of intersection that they affect each other, by adding to or diminishing their force or even by neutralising each other, when *interference* arises.

Exp. Hold a tuning-fork in a state of vibration, so near to the ear that its tone can be easily distinguished; if its handle be turned round with moderate quickness, it will be observed that the sound seems almost to cease, when the aperture of the ear is in a line with the diagonal drawn through one of the prongs, and that it is most plainly heard when the flat face of the prong is towards the ear. This change in the increase and decrease of the strength with which the sound falls upon the ear takes place four times in each revolution. To perform this experiment so that several persons may perceive it at the same time, turn the tuning-fork round over the mouth of a glass flask.—*Peschel's Elements of Physics.*

MEMORANDA, THROUGH THE AID OF A "PERSPECTIVE" MEDIUM.

In inquiring into the origin and meaning of terms, we frequently discover singular instances of words becoming fixed in a sense opposed to their etymology: this is particularly striking in those adopted in architecture. The subject has several times occupied our attention, and is so far important, that it may continue to do so. Meanwhile it is interesting to consider the use of the word "perspective." Properly speaking, according to Mr. Fox Talbot, there should be two words, one derived from *perspicere*, to look through, and signifying a telescope, and the other the science, or art, of delineating objects upon a plain surface. This discrepancy is pointed out by Mr. Talbot in his late work on "English Etymologies;" and he argues, that the science should be called "*pros*pective, being the art of delineating a prospect, or view. And so it is called in Italian *la 'prospettiva*,' which shews the error we have fallen into." There may be also, some evidence of the want of precision in this term, in the constant pronunciation given by those who are not in the constant habit of using it; and these persons, called "uneducated," are, it seems, not in error in the use of "prospective," which appears to them, and is thus considered to be correct. It is clear that in speaking of objects or scenes to be observed or delineated, we should discriminate between the object itself, and the medium of conveying the impression. In the ordinary dictionaries, the word "perspective" is interpreted indifferently, as "a spying-glass," "a view," "a vista," or as "the science of delineating objects;" and the propriety of, at least, the meaning first given, is shewn by the etymology. In old topographical works, we find any illustration, say of a mansion, called "a prospect or view" of whatever place, and "la prospettiva," when similarly employed, would seem to be strictly synonymous. Now the *science* of perspective is founded upon the supposition, or fact, of a medium being interposed between the object, or prospect, and the eye, which medium performs the office of conveying the impression, just as does the telescope. Admitting therefore, that Mr. Talbot's arguments are worthy of attention, and that "prospective" *may* be a very fitting name for the delineation of a prospect, we merely say, that the ordinary use of "perspective" as the name of the *science*, is capable of defence, as the science may perhaps correctly take its appellation from the actually *perspective* medium, its groundwork as a science. However, the use of "perspective" substantively and alone, to signify a delineation, is we need hardly say erroneous; obviously it should be used as an adjective.

We may further make our memoranda the medium of noting down the explanation of another use of the word "perspective," which has puzzled many commentators upon Shakspeare. In the Shakspeare Society's papers, (1844, Vol. I. Art. XXII.) Mr. Tomlins has given some corrections of the ordinary text of Shakspeare's plays, made by Sir Wm. Blackstone, great as a commentator upon a very different subject; but, as amongst the hundred other speculations about the great poet, it has been asserted that he was a lawyer, and proved, to the extent that almost any other similar opinion may be, from the internal evidence of his works, perhaps he may furnish a precedent. The notes are headed:—

"Cursory observations on Shakspeare, with a particular view to S^r T. H.'s emendations. A.D. 1746.

"The Quotations are according to y^e pages of y^e London edition in Octavo of 1745 (viz., S^r Tho. Hanmer's edition of Shakespeare)."

And amongst them is the following:—

"Vol. III., page 219, K. Rich. II., sc. 5,

> "Like perspectives, which rightly gaz'd upon
> Shew nothing but confusion; eyed awry
> Distinguish form.

The perspectives now used, are surely widely different from those used in y^e days of Shakspear! We should rather have wrote (as perhaps he did),

> Like perspectives, which gaz'd upon awry,
> Shew nothing but confusion; rightly eyed
> Distinguish form.

Besides that this Reading agrees with y^e sense, w^{ch} y^e other does not."

It seems not to have been the object of the contributor to make further comment upon these Commentaries of Blackstone, or perhaps the extract in question would have afforded sufficient room for it. The passage in the play, occurs not in any fifth scene, but in act II., scene 2nd, and reads thus:—

> "For sorrow's eye, glazed with blinding tears,
> Divides one thing entire to many objects
> Like perspectives," &c.

It seems, that the word is here used in the manner to which we have objected; and possibly something like the child's toy, by which a building, delineated upon a horizontal surface, in a distorted form, is made to appear correct, when the eye is fixed at a certain point, might be what was referred to. But, in a note in "Knight's Pictorial Shakespeare," which, having been published previously, would have been worth alluding to in the article, the explanation is perhaps more correctly given thus:—

"These perspectives were produced by cutting a board, so that it should present a number of sides, or flats, when looked at obliquely. To these sides a print, or drawing, cut into parts, was affixed; so that looked at 'awry' the whole picture was seen, looked at *direct*—'*rightly* gaz'd upon,'—it shewed 'nothing but confusion.' Dr. Plot, in his 'History of Staffordshire,' describes these perspectives." This toy may indeed now be seen in many shops, and was probably that alluded to, as it agrees best with the lines preceding those quoted by Blackstone; and the other would require a more accurate knowledge of perspective than we are in the habit of ascribing to ordinary artists of Shakspeare's time. The art of delineating, though it had occupied the labours of many great men in Italy and England, was certainly inferior to the present time in one branch, that of linear perspective; and the state of this art would afford a subject for much interesting research, the more so from its connection with the early history of the drama. We know that in the treatment of perspective, the artists of the present day are honourably distinguished, though even less than their merits deserve, from the circumstance of the art finding its exercise mainly as a department of the profession of an architect, and coming, comparatively, little before the world. As scene painters, too, there are several artists of rare ability, not only as delineators, but as producers of designs, characterized by remarkable originality and great power of fancy.

THE IPSWICH MECHANICS' INSTITUTION COMPETITION.

Sir,—I am glad to be able to put you in possession of the facts of this case. I must first tell you, however, that a circumstance has occurred which places me, feeling most strongly as I do upon the subject, in a somewhat awkward position. It is no less than the receipt of an assurance from a member of the committee, a man above all suspicion, personally known to and respected by me, that the greatest care was taken and much pains bestowed upon the consideration of the designs, seven in number, and that to the best of his belief the plans chosen were the *best*. Now having fairly stated so much, I have no hesitation in giving you a sketch of the whole proceedings, such as they have appeared to those who, like myself, have watched them with some interest. The tale is a brief one.

There is resident in Ipswich a retired tradesman, a man I believe of great respectability, whose pleasure it is to invest his capital in the erection of dwelling-houses of different classes. He is like Osric, "spacious in the possession of dirt," and among other precious things holds certain land in the very centre of the town, whereon on either side of *the new street to the new* railway station (an ordinary case) are arising, in reality or imagination, houses, shops, bazaars, arcades, a museum, *et hoc genus omne*, calculated to return from — to — per cent., but not calculated, as I could shew you if you were here, to add to the architectural glories of Ipswich. Well; the museum being secured, it was thought — a happy thought! that an opposite corner destitute of an occupant, could not be better appropriated than to the purposes of our Institute! Now this gentleman's son happened to be a member of this very institute's very building committee, and to be supported therein and thereon, as the very sequel will shew, with and by a majority. It was *tried on*. The gentleman's 'architect' (pronounced here most frequently artshitec) was employed 'to make a plan.' This person is one of those "members of the profession," who, not having been troubled with any servitude, real or feigned, other than that which belongeth unto the bench of the honest carpenter, is not often troubled with scruples of professional etiquette as you shall hear. Well nothing else would do. The sub-committee reported that they had found an eligible spot, and had a plan *in petto*. The great committee would have nothing to do with the land, and would have a competition for the building. Good! now comes the pith of the story. The competitionizers carried the day, but were "gravelled" to know what premium to offer: when lo! who should be opportunely outside the door, but this very man of lines and rules, this "artshitec." Call him in—ask him the question—'tis done, and he fixes the value of the

aggregate professional talent of Ipswich at five pound five!!! It staggers you—I vouch for its truth. The end is of course in view from that hour. The advertisements appear—are laughed at—denounced—scouted; read, listened to, and for various reasons answered. The committee meet. They consult, and after a week's grave deliberation they select (remember "my son and his majority"). Well, and who, suppose you, is the fortunate individual. You cannot guess. These things are of course so uncertain. It is the best design of course, and may be from the man in the moon. Well—wonders will *not* cease. In this instance singular coincidence! *the* man turns out to be no other than the very artshitec, the man of planes and chisels, the heaven-taught member of the profession. Yes, he made the first plan. He said, "five pound five" was the "wally" of the article, and he's *won* it.

Anon—that is, in Saturday's Journal, you shall hear what occurred at the public meeting which followed. Suffice it now to say they accepted the plan. I feel I have occupied too much of your space, and therefore hastily subscribe myself an

UNWILLING SPECTATOR OF THESE DOINGS.

Ipswich, 16th March, 1847.

YEOVIL TOWN-HALL COMPETITION.

SIR,—Your columns of the 20th ult. contained an advertisement for designs for the above building. I applied for the particulars, the terms of which, as they are no doubt known to many of your readers, I will not trouble you with; but a circular I have to-day received is so rich a specimen of its class, that I cannot resist forwarding it to you, with my rejoinder. Your present notice of this affair will effect far more good than the insertion of a score of complaints made to you, as they generally are, *after the competition has been settled:* and the only parties in power are the committee, who have obtained the designs required.

For my own part, I cannot blame these gentlemen at Yeovil at all. How can they be supposed to know intuitively what is due to architects on such occasions? It is exceedingly natural for them to squeeze as much as possible from the competing parties, who, good souls, seem so silently patient of their yoke. Finding that such terms as these *draw* designs, porterage, postage, post-office orders, *et cetera, et cetera, et cetera*—who knows but more daring spirits ("Special commissioners" yet unborn) may advertise for designs to be submitted carriage free, with a ton of slates, or a few loads of timber *gratis*, from each delighted competitor?

Architects have no one else to thank for this state of things but themselves: its cure most assuredly rests *with them*. If they would but *themselves* dictate, and insist on terms with advertising parties, *previous* to submitting designs for public structures, they might considerably ameliorate, if not altogether reform the system, of architectural competition; a thing most excellent in itself, to which the public are mainly indebted for such beautiful modern edifices as we have, and the profession (albeit it is now most grievously taxed for it) the well-merited distinction of some of its gifted members.

I am, Sir, &c., WILLIAM YOUNG.

London, March 11, 1847.

Yeovil, March 10th, 1847.

SIR,—I beg to inform you that at a meeting of the special commissioners held this day, the time for receiving plans was extended to the 29th instant, from such architects as shall deliver their plans to me, free of postage, on that day, accompanied with a post-office order for 5*s.* payable to me, to meet the extra expenses.—I am, Sir, &c., J. T. VINING, Clerk.

The reply was "I am obliged to you for the promptness with which you have replied to my inquiries; but having just received your printed circular of the last resolutions of the special commissioners, must beg to decline competing, in a case where architectural competition is evidently considered a boon to the profession not to the public."

We have received copies of this circular from seven other quarters with similar expressions.

Since the above was set up, we have had intimation that Mr. Vining has written to say he will "waive the payment."

THE BOND QUESTION.

SIR,—I was much interested by Mr. James Wylson's account, in your last number, of certain experiments instituted by Mr. T. U. Walter, of Philadelphia, regarding the expansion of iron in thick walls. But although these experiments seem to prove what, with some reservation, I ventured to doubt, viz. that stone and mortar, or brick and mortar, do somewhat impede the transmission of heat (or in other words, that these substances are slower conductors of caloric than I had supposed), I still deem it very probable that when such walls as our present fashionable walls,—and which are not quite "5 feet 5 inches thick,"—become so perfectly dry that cold is no longer produced in them by the evaporation of their aqueous matter, iron would eventually acquire the same temperature as the atmosphere surrounding them.

The ingenious experiments of Mr. Walter should be tried, therefore, on walls of such thickness as those in which iron bond is now commonly employed.—I am, Sir, &c.,

March 10th, 1847. W. BROMET.

SIR,—As a great deal has lately been said respecting the use of iron and wood bond in buildings, I am induced to follow your correspondent, "A Builder," at page 67 of your valuable journal: and, like him, I advocate the use of wood bond, but not cut to the size mentioned in the requisition to the referees, quoted in your leading article of Jan. 23rd;—as no practical man would ever be found so foolish as to use bond timber 4 inches by 4 inches, knowing it would not range with his regular course of brick in thickness, and he would be obliged to cut one inch off the course of brick immediately above the bond.* As bricks are but 2½ inches thick, if bond timber is cut full 3 inches thick, and laid on the wall *without any mortar*, it will never move from where it is laid, let what may be fixed to it; but it is a well-known fact among practical men, that when bond is laid in mortar, as soon as you begin to fix to it, it becomes loose, and it is the same with wood bricks; not one in fifty is fit to fix to, and the workman is obliged to wedge his bond and bricks before he can fix to them. And in fresh brickwork, by driving one wedge, you disturb at least from four to six bricks, but if bond is cut full 3 inches by 4½ of good oak, instead of the rubbish that is too often used, we shall hear no more complaints of the use of bond timber in buildings, and all the hoop iron in England will never equal it.

I am, Sir, &c., GEO. CLARK.

March 9th.

* This scantling, in the requisition in question, referred to *plates*, not bond.—ED.

BUILDERS AND ARCHITECTS.

SIR,—In your article of last week, with reference to "the profession of the architect," you advocate that in all cases of alterations or improvements an architect should be employed, for the benefit of the builder and his employer; "And to discriminate between the profession of architecture and the trade of building, we conceive to be alike important to the interests of both, though not usually so considered as regards the latter. The builder may otherwise so readily be under an accusation of having magnified the amount, or, to increase his profits, of having executed his work in an inferior manner, that it cannot but be his interest to relieve himself from such imputations." In these remarks I certainly agree; and if the architects would act honourably to the builders, most decidedly it would be to their interest to recommend, in all cases, the employment of architects; but I am sorry to say there is not that unanimous feeling existing. For example, a gentleman or tradesman is about to make extensive alterations in his house or premises. He has a builder, who has done business for him for years, and whom he has found, after years of experience, to be an honourable straightforward tradesman, and in whose hands he feels perfectly satisfied in placing the execution of his work, even without any contract whatever. Now, would it be to the interest of that man to recommend the employment of an architect? Most certainly not; not from any sordid or selfish motives; not from any feeling that his work would be under the supervision of that architect, and he would not be able to "magnify" his works and "increase his profits," or use materials that would best suit his purpose: I say not from any such views as these, but from the following cause:—

Suppose he recommends an architect to be employed, what is the architect's first step after the drawings have been approved? Why he puts the following question:—"Do you mean to employ Mr. —— for these works?* I should recommend you to put this job up for tender; you will get it done for 400*l.* or 1,000*l.* (as the case may be) less than if you leave it to Mr. ——. Allow me to make out a specification, and I know men that will be glad to put in for it." Well what is the result. Why sir, the man who has done the work for years, and done it too with the strictest honour and integrity (for there are still in the world men of honour, in whom every confidence may be placed), is defrauded of his job by some scamp, or one who never pays for his material, and calls his creditors together in a few years afterwards, and he probably loses the general yearly work also, because the employer now thinks him a dear man.

Why should not the architect be content with seeing *justice* done to his employer, without robbing the tradesman of his custom? but at the present time justice will not content them. Competition and tendering is their motto, and never until they give that up, and allow the fair tradesman a fair price, will there be a friendly feeling existing between the generality of builders and architects.—I am, Sir, &c.,

S. J. K.

* Our correspondent is dealing with exceptions, not the rule.

FOREIGN ARCHITECTURAL AND COLLATERAL INTELLIGENCE.

Paris City Improvements.—A Strong Pull, a Long Pull, and a Pull Altogether.—The corporation of Paris have an annual income of from forty-six to forty-eight millions of francs—of which *ten* are always fluent and available for structural *improvements*. Some debts, however, have been previously contracted, the amortization of which had to finish in 1852. A constant struggle between quick and slow (reformatory) movements had been carried on for years, until the lord mayor proposed of late to make one final, great attempt at reform, and to borrow for this purpose twenty-five millions of francs more. The question now, however, assumes two different aspects. By contracting this loan (to begin with the *negative* of the case), the amortization of the debt of the city of Paris is prorogued until the year 1858, which will cause that inconvenience, that the great reform of the *octroi* (excise and other duties) will be also necessarily delayed. His lordship has, however, on the other hand, laid a magnificent plan of new structural reforms before the corporation, which, albeit the expense be great, viz., seventy-two millions of francs, will make a clear sweep of most of the hitherto drawbacks on the salubrity and picturesque aspect of Paris. Amongst these plans is another market-place, instead of that "*des Innocens*," at the cost of twenty millions of francs. This is considered an improvement most essential and sanatory. The city payments towards replacing the present opera-house are put down at four millions, as the corporation wishes that the new building be erected between the Palais Royal and the Place du Carousel, which would lead necessarily to a prolongation of the Rue Rivoli, for which sake a nasty nest of lanes and houses is to be purchased and pulled down. The next items to be defrayed from the proposed loan, are the building of the *gothic* church of St. Clotilde on the Place Belle Chasse, valued at three millions,—a new *hospital* at six millions; the remaining sum going towards the enlargement and cutting of new streets.

The Prussian Houses of Parliament.—The expedition with which the late constitution was published, made the adoption of some temporary *locale* necessary, and H. M. the king has now approved the plans and drawings submitted to him. The two houses will meet, for the opening festival, and subsequent business of this session, in the White Hall (*Weisse Saal*) of the royal palace. The throne will be situate in the middle of the back *longitudinal* wall, at whose side will be the ministerial benches, and beside them the seats for the

lords. In front of the throne extend the seats of the members of the lower house, being placed in eight divisions, according to the eight provinces of the realm—each divided by a passage. The seats are red-cushioned little benches, with a writing desk, capable of being turned down. Each seat has a number, but not relative to any division. The stenographs to occupy an especial gallery. Adjacent rooms to serve as bureaux, &c. All this, however, will absorb so much space, that the king will have to remove to Potsdam, where also all the festivals of the season will be held.

The Vienna Academy of Sciences.—As the limits of the plan proposed to the emperor by the Chancellor of State have appeared to be very *narrow*—the Archduke John (a sort of emulant of the Duke of Sussex), has been requested to compile another, which it is said will extend the activity of the academy over every branch of science.

French Railroads.—The Government have deemed proper to *increase* the surveillance over the construction and management of these public conveyances, as accidents occurred of late on *two* consecutive days on the same (the North) line. In consequence, the viaduct of Virville, on the Havre-Rouen Line, was ready for traffic, when a commission was sent who charged it with a heavy weight, by which it sustained serious and considerable injuries. By such timely superintendence the income of several lines has already *decreased*—but the security of human life, will, as a matter of course, *increase!*

Monument Mania.—Subscriptions are now raising in Germany for erecting a memorial to Professor List, the political economist, who died a *voluntary* death in Kuffstein.

Improvements at the R.A. Munich.—According to a royal decree of 14th August last, certain grand changes had to take place, which now, we are happy to say, have been carried into effect. A new chair of the technicism of painting (*Maltechnik*) had been created, to which the historical painter, Mr. Hermann Anschütz, a native of Prussia, has been nominated. The place of corrector in the Hall of Antiques, has been conferred on Mr. Hochbach, teacher of design at the schoolmasters' seminary, at Altdorf. Thus the staff of that splendid institution is now at its full complement.

A "German" Technological Cyclopædia.—This work, undertaken by the *late* Mr. Krünitz, deserves to be noticed as a literary *curiosity*. Its publication began *seventy-four years ago*, viz. in the year 1773, during which time *one hundred and ninety* volumes, in gr. 8vo., have been published, costing the subscriber upwards of 600 dollars. Still, this Cyclopædia is not further than the letter T.

A Duke-Numismatist.—We are sorry that we are precluded from more than *mentioning* the work of the Duke de Luynes on Phœnician and Satrapic coins—still interesting even for the artist. His grace has properly classified many valuable medals, hitherto confounded with Sicilian coinage — and elucidated that interesting fact, that coins of the Westerly Satrap (from Thracia to Egypt) had Phœnician inscriptions, as the language and coinage of that nation enjoyed the widest reach.

The Great Suspension Bridge at Kowno—will be built by English engineers. As the debordments of the Vistula are very great here, the length of the bridge will be excessive, and cost eight millions silver rubles (at 4s. each).

Wesleyan Chapel in Uxbridge.—A new chapel is about to be built in Uxbridge. The following is a list of the tenders for its erection, sent in on the 10th inst.

Kingsland, Uxbridge.....	£535
Snowball, Slough	589
Burbridge, Richmond	635
Page, Uxbridge.....	650
Morton, do.	664
Clements, London	695

Fire in Another Theatre.—The opera-house at Struttgard took fire lately in some of the usual vulnerable points so numerous in dangerous edifices such as these; and the presence of mind of the prince royal alone preserved hundreds from injury or death in the general rush which the auditors and spectators made towards the doors. The fire does not appear to have done much damage, and no life was lost.

A CHAT ABOUT LOCOMOTION.

It is interesting to retrace the *rapid strides* which railway speed has made since 1824, when the first locomotive astonished the world by travelling along the rail at the rate of six miles an hour,—or rather, by travelling at all on a smooth rail, and without cogged wheels, and not, as was expected, merely wheeling round without locomotion. Yet, strange to say, in that very year, or rather in the year preceding, we recollect participating in the wonder with which perhaps a still more extraordinary invention was then contemplated—an invention which has not even yet been brought to any thing like practical utility, if indeed it ever will, but which at that time promised well for future success, even whilst the locomotive on the untoothed rail remained a very doubtful speculation in the minds of many. Strange to say, we repeat, at that very time, and previous to the test applied on the Manchester and Liverpool,—when the directors on that line were said still to contemplate the likelihood of jogging on with horses, ere the bright idea of offering a premium for locomotion was matured, we distinctly recollect running along one of the high roads near Edinburgh, on a locomotive independent of all rails, and at a rate of *more* than *six* miles an hour,—the grand accomplishment of the "first locomotive" of the rail,—and that, too, although the persevering and talented inventors of the machine to which curiosity had impelled us to trust our joints and members, bore the almost incredibly ominous names of Burstall and Hill. To be sure there was no hill in the way, otherwise our high-pressure engine might have indeed burst all; but as it was, we remember that our enterprising conductor for a moment lost command of his fore-wheel regulator, and the immediate and inevitable consequence was a dash of all and sundry through a thick-set thorn hedge into the garden of an astonished old gentleman, who, in his latter days, had, once for all, as he thought, been obliged to admit that mail coaches on turnpikes were the very *ne plus ultra* of perfection. That locomotive experiment, however, was certainly, on the whole, a promising one, and at a time, too, when no such promise brightened the future prospects of the rail which has since done such wonders; but the result has been an instructive one in its relation to the apparent merits of contemporaneous speculations or inventions of a kindred order. Even yet, however, it must be confessed, that an experiment conducted on an enterprising scale, in the establishment of splendid locomotive coaches on the common road between Glasgow and Paisley, was perfectly successful so far as regards the practicability of running such locomotives at a pretty rapid speed; only an unfortunate accident, unconnected with the merits of the invention it was alleged, at length led to an interdict, such as might have foreclosed us from the benefits of even railway transit itself, had such an accident on the rail been followed up by such an interdict at the outset.—Our purpose, however, in alluding to the rapid strides which locomotive speed has made since 1824, when six miles an hour was the maximum, and when the only wonder was the possibility of locomotion without horses at all, —has been held all this time *in retentis*. The speed of "The Rocket," in 1829, had reached the extraordinary rate of 15 miles an hour; but wonder was destined to succeed wonder, and in 1835 "The Firefly," had distanced even the whizzing "Rocket" by at least five miles more. Another stride of as many years, and the "North Star,"—a most inept cognomen that,—the most fixed and stagnant (to our sight at least) of all fixed stars, to what must have then shone out as a shooting star of the first blaze of magnitude—shot off with a maximum velocity of 37 miles an hour. Since then, as every one knows, even that, now and then, is nothing to the deeds of latter days, during which an ascertained speed of at least 72 miles an hour, as instanced in "Tuck's Railway Manual," to which we have just been referring, has been occasionally attained. Indeed, we have even heard it whispered by those whose only doubt was probably whether they should be believed, that the maximum of all minor achievements had merged at length into a "cool hundred." The quantity of fuel, on the other hand, required during these truly rapid strides, to keep the steam up, has been continually diminishing, so that now but a sixth is required of what was formerly expended. Other expenses also have diminished in a corresponding ratio, and the length of way now cleared for the accomplishment of the rapid flight of railway locomotive transit, has been estimated at about two and twenty thousand miles, along which, therefore, were the whole in one continuous line, a locomotive would require to travel, night and day, for forty days and nights, at the rate of five and twenty miles an hour, to accomplish the distance. Man may now begin to boast of having done something at least towards compassing the globe with his iron arteries of universal intercourse. Our own beloved country is, of course, at the head of this great movement—far a-head indeed, of all competitors—and more than doubling all that has been done throughout the world besides, even brother Jonathan inclusive.——Great Britain and Ireland have been traversed by 10,323 miles of railway, British colonies by 1,000 more; East-India by 500 more; America, by 3,800; France, by 2,200; Germany, 1,570; Belgium, 1,095; Cuba, 800; Holland, 200; Italy, 115; Denmark, 106; Russia, 52.——The profits returned on the immense amount of capital thus invested are declared, by the chairman of the Manchester and Leeds line (Mr. Henry Houldsworth) not to exceed, over all, 6¼ or even 6 per cent., so that the capital, in this event, would appear, on the whole, to have been so far faithfully expended for the general behoof. ——Atmospheric traction seems determined to keep its head above water, notwithstanding many a conflicting statement as to its merits. On Friday week, it is said, that a train, in which were Messrs. Brunel and Samuda, performed the distance from Exeter to Turf (six miles) in four minutes!——Experiments have been made with Crampton's new engine, which is said to have run a train of 50 tons weight, on a gradient of 1 in 330, at the rate of 44 miles an hour, and down a falling gradient of 1 in 1,000, at 56 miles an hour. The engine was not tried at the extent of speed to which it could go, in consequence of the axles heating. The driving wheel is 7 feet in diameter, and the engine only 6 feet 9 inches high, the axle of the driving wheel being placed behind the fire box to prevent raising the centre of gravity of the engine too high. ——The best of our railway engine-drivers, it is said, have been induced by large offers to go over to the French lines, and to prevent the able men from deserting to our friendly "enemy's camp," the English companies have been obliged to raise their salaries to 3*l.* or 4*l.* a week. ——The Blackwall Line is to be reduced in width of rail from 5 feet to the 4 feet 8½ inches, or national gauge, and the rope is to be discarded and locomotive power applied.——So much of the bill for the Regent's Canal Railway scheme as affects the Regent's Park and the parish of Marylebone is to be withdrawn. ——The timber works of the Lowestoft Harbour and Railway North Pier, 1,300 feet in length, with the pier-head, have been completed, and the South Pier, 1,250 feet in length, is in rapid progress; 2,000 feet of pier work have thus been done since May last. The railway works also are nearly completed, and a large hotel and sixteen villas are to be erected, and a capacious promenade formed, so as to render Lowestoft an attractive watering place.——An extensive tract of land in Station-street, Nottingham, has been all but purchased by the Midland Company for the erection of the very large passenger station formerly noticed.—— The contracts for the new passenger station at Hull, also before noticed, were let at York on Monday last, to Messrs. Hutchinson and Siminson, who are to receive between 50,000*l.* and 60,000*l.* for the same. This is exclusive of the cost of land, rails, &c.——The works between Chester and Warrington, on the Birkenhead, Lancashire, and Cheshire Junction, a distance of 18¼ miles, have been let to Mr. Brassey, upon a guaranteed contract not exceeding the Parliamentary estimate. These, which are the only works of any magnitude upon the line, comprise a tunnel of 2,050 yards, and a viaduct of 580 yards. The directors have also concluded terms for the erection of a joint station at Chester.——Mr. Scott, of Huddersfield, has been declared the contractor for completing that portion of the Whitehaven and Furness Junction Line called

"The Drigg Contract," an extent of about three miles and a quarter. The contract for making the extension of the Furness Railway to Broughton has been taken by Messrs. J. B. Fell and Charles Jopling. The operations will be commenced immediately. —— The *Carlisle Journal* states that three hundred men are now employed upon the general station of the united railway companies in that city. The foundation stone was laid by Mr. R. Hemberow, architect for the contractors, on Monday week. —— In one of the shafts of the tunnel at Craigend, says the *Perthshire Courier*, the workmen lately came upon a considerable block of very pure rock salt. —— Messrs. Brassey and Locke have obtained the certificate of the French engineers, approving of the state of the various works on the Havre and Rouen line, and authorizing its opening. They have had an interval of three months for consolidation, whether designedly for that purpose or not is not stated, though the delay is regarded by parties interested as unnecessary and vexatious. The line was to be opened on the 20th instant. The directors, in consideration of the distress of the times, have benevolently resolved to dispense with the ceremony of inauguration, and to distribute the 10,000fr. or 12,000fr. which it would have cost, amongst the more indigent of the communes through which the line has been struck. —— A gigantic project for the connection of the Mediterranean with the Northern Ocean, Antwerp and Genoa the termini, is at present on the tapis. The Sardinian and other Governments have come to an understanding on the subject, more particularly for the connection of Germany with Piedmont, across Switzerland, in the direction of the Lake of Constance. A convention has been signed guaranteeing a minimum of 3¼ per cent. interest on a capital of 3,000,000*l.* [75,000,000 fr.] to be raised by a company in London.

THE RAPHAELESQUE STYLE OF DECORATION.*

The Raphaelesque style, as we now term it, was called the grotesque by the Italians of the 16th century, from *grotte*, the word by which they denominated the antique subterranean chambers, which, about that period, were brought to light by clearing them of the *débris* of ruins which had accumulated upon them during a number of ages. On the walls and ceilings of these vaulted chambers and corridors were found the fresco decorations, the study of which revolutionized in so short a time the decorative art, and established that style which we recognise in the works of Raphael and his scholars. * *

These new materials for decoration were obtained chiefly from sculptured architectural ornaments, such as the foliage adorning the friezes of temples, intermixed with human figures, terminating in foliage, armour, military trophies, standards, and helmets, &c. A combination of these materials in decoration was called grotesque, as were also the antique mural decorations before-mentioned. Grotesques were first applied to ornament pictures. It is uncertain what artist first introduced them; Lanzi says that Vasari attributes to Filippino Lippi, who flourished towards the latter end of the 15th century, the credit of having first decorated modern paintings with grotesques copied from the models of antiquity: but as a note in the life of F. Lippi by Vasari intimates, he says merely that he designed them in a better style and executed them with more elegance than the artists before his time. At the end of the 15th century there were many painters who cultivated the art of grotesque decoration with great success. Amongst these the most celebrated was Pinturicchio, a pupil of Pietro Perugino; one of his latest works is the frescoes which he painted for Cardinal Francesco Piccolomini, in the sacristy of the cathedral of Sienna, illustrating scenes from the life of Pius II. In this work, which was finished in 1503-4, he was assisted by Raphael. His earlier works at Rome were done for Innocent VIII. and for Alexander VI., in the Appartamento Borgia, in the Vatican palace. Vasari says, that in the latter work he introduced stuccoes after the manner of the antiques, but the mode of working and compounding the plaster not being then known, they failed, and were in a bad state in his time. In all his decorations he used a great deal of gold. The decoration of the choir of Santa Maria del Popolo, at Rome, is one of his most beautiful works; at the angles of the ceiling are represented the four Evangelists. Benedetto Bonfigli was one of the early masters who painted grotesques; though much older than Pinturicchio, he was his companion in many of his works; he painted with him the grotesques in the apartment of Innocent VIII., but they were not in existence when Lanzi wrote. Pietro Perugino, about the year 1500, painted some beautiful grotesques in the Sala del Cambio, at Perugia. On the gothic vault of this room, in lunettes, are personified the seven planets; the spandrels of the arches are filled in with grotesque decorations, well designed and of great variety; in some compartments they are on a gold ground, and in others on a black ground.

About the beginning of the 16th century was introduced the external decoration of buildings, with architectural perspectives and friezes of grotesques, painted in chiaro scuro. Baldassare Peruzzi was the originator of this style; and he was followed by Polidoro da Caravaggio: both artists decorated the exteriors of many houses in Rome. At this day we see remains of their works in the old part of the city.

Morta da Feltro, a pupil of Pinturicchio, was the first artist who studied the antique mural decoration, which he imitated with great success in his works. At that time the baths of Titus were not excavated, but remains of this style existed in many other localities,—in the baths of Diocletian, and in the Coliseum at Rome; also in other parts of Italy,—at the villa of Adrian, near Tivoli, and at Pozzuolo and Baja, near Naples. He came to Rome when young during the pontificate of Alexander VI., where he studied for some time those particular remains of antiquity. He remained also a long time at the villa of Adrian, and pursued his studies of these subjects even at Pozzuolo and Baja. There are no works of this artist now existing. When in Florence he painted grotesques for Piero Soderini, the gonfalionere of that city, in a room in his palace, but they were soon afterwards destroyed.

Most of these grotesque paintings have been long ago destroyed; none are now in existence except those of the baths of Titus and of the baths of Livia. Serlio gives a most extraordinary account of their destruction, affirming that after they had been copied, they were destroyed by artists from an invidious feeling, but he does not name them, for he says they were artists of celebrity living in his day.

Giovanni da Udine, a pupil of Raphael, was the first artist who brought to perfection the painting of grotesques. At the death of Bramante, in 1514, the architect to the Vatican Palace, during the time of Leo X., the loggie were unfinished; Raphael was then charged by the pope with the superintendence of the building as architect, besides being the designer of the decorations of these loggie. The care of the execution of the grotesques and ornaments he committed to G. da Udine, of whom Vasari speaks in such high praise as the first painter of animals of that day. In Raphael's loggia he introduced into the decoration paintings of various foreign animals which the pope had in his menagerie. Many other artists assisted in this work, the best among whom were Gio. Francesco, Pierino del Vaga, Polidoro da Caravaggio, and others. About this time the subterranean chambers of the baths of Titus were discovered, 'full of grotesques, painted histories, small figures and stucco ornaments in basso-relievo.' The beauty of these works was the admiration of Raphael and his scholar, G. da Udine, the latter of whom devoted himself with enthusiasm to the study of them; he made numberless drawings of the ornaments, and particularly applied himself in attempting to discover the composition of the stucco ornaments, in which, after many experiments, he to a great extent succeeded. Many of the numerous pupils who were employed by Raphael in decorating the Vatican, left Rome upon the death of Leo X., and multiplied their works throughout Italy. In the works of his ablest scholar, Giulio Romano, Raphaelesque decoration had reached the utmost degree of excellence to which it attained; his most excellent works are at the Villa Madama, near Rome, and the Palazzo del T. and the ducal palace at Mantua.

* From "The Polychromatic Ornament of Italy," by Edward Adams, Architect; an interesting work, recently published by Nickisson, Regent-street, and of which we shall speak hereafter.

IMPORTANT TO BUILDING SOCIETIES.

A doubt having arisen as to whether societies, acting under the Building Societies' Acts, could legally advance or grant moneys upon the security of property then existing and in the possession of the borrower, it being considered that the Act of Parliament contemplated, with a view to the furtherance of a more complete sanatory condition of the metropolis, the erection or purchase of buildings only, a case has been submitted to Mr. Tidd Pratt for his opinion. The following is a copy of the queries put and opinion given:—

"Question 1.—That under the provisions of the 6th & 7th William IV., the contemplation of building only was considered, the creation or purchase of property being the same. Is it not necessary that a party who becomes entitled to the money appropriated should build or purchase? Or can he assign property in his then immediate possession, as security upon the terms contained in the rules for its repayment, or any other moneys provided for such purpose? And if so, whether any new rules would be necessary to enable the trustees to deal with such a transaction? And whether, presuming that the trustees are incorrect in making such advance, the party taking the same, being a member, could take any advantage of it, so as to defeat the security or liability to pay? Or whether such a transaction would be affected by the usury laws, or any other laws or circumstance whatsoever?"

"Opinion.—It appears to me that, in strictness, under the provisions of the Benefit Builders' Societies Acts, the money borrowed from the society *should be to* erect or purchase property; and, consequently, that a member cannot assign, as security, property which he already possesses. If money is advanced not according to the rules and provisions of the Act, I am of opinion that the member, or any person claiming under him, might set the transaction aside, and in equity, would be entitled to a return of his deeds on payment of principal and legal interest."

CATHEDRAL PORCHES.

THE PORCH AT CANTERBURY.

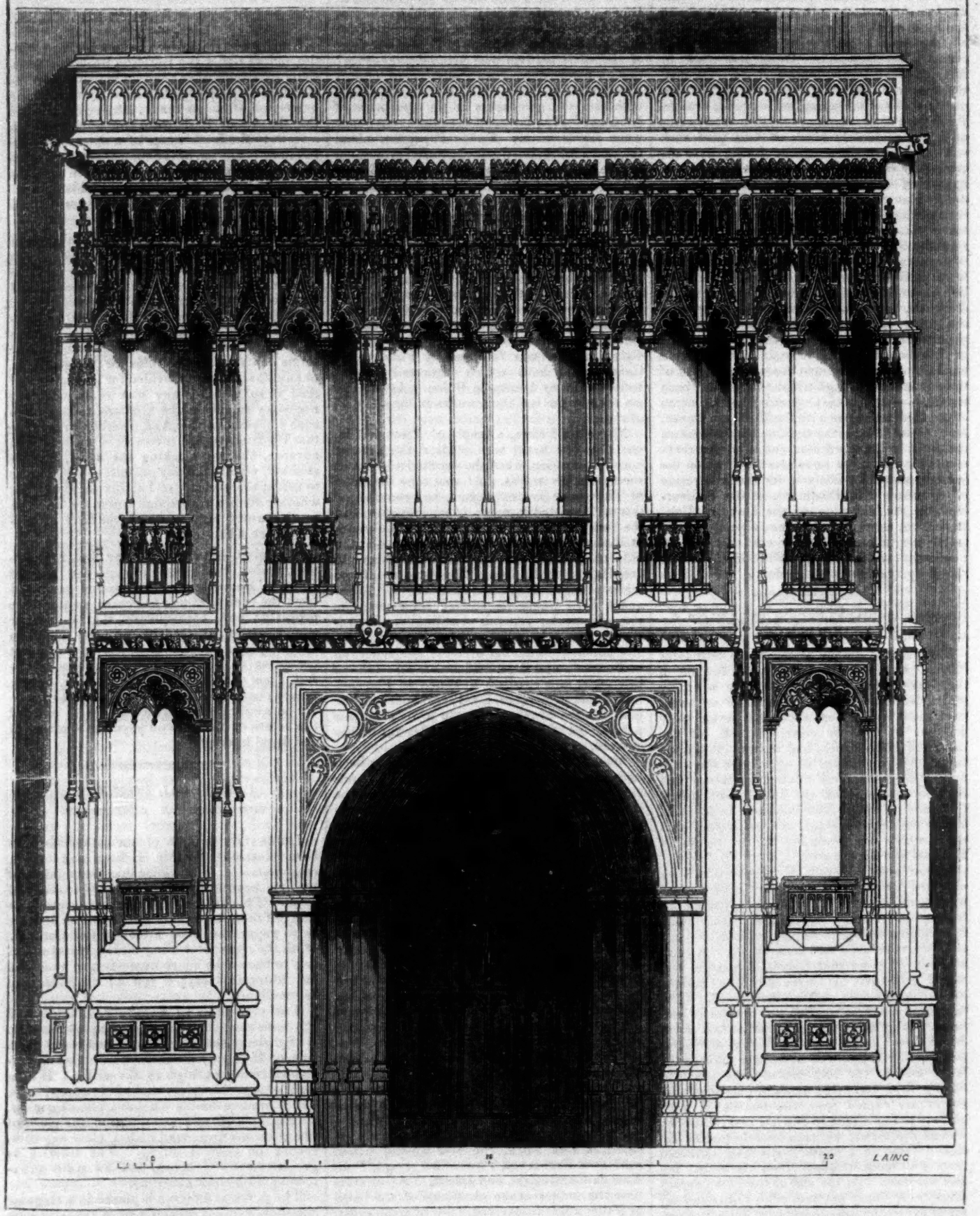
Liberally as most of our cathedrals have been illustrated by Mr. Britton and others, comparatively little notice has been taken of the very beautiful porches attached to many of them. This is the more to be regretted, as many of them are rich in detail, and so delicate as to repay the most attentive examination. With the view of calling more general attention to them (the more necessary, as some are fast falling to decay), a few of the finest may be mentioned.

The cathedrals of Salisbury, Lincoln, and Ely have each very fine early English porches. At Salisbury, the porch is attached to the north side of the nave, of which it occupies one division, rising as high as the aisles. It consists of a noble plain arched entrance, over which are two double windows, close together, resting on a string; and quite in the point of the gable are two small niches, close together, resting on another string. The interior is groined in two divisions, and its walls ornamented with sunk panelling.

The porch at Lincoln is placed in a singular situation, running westerly from the west side of the north transept. The lower part is a rich piece of groined work, with three entrances, north, south, and west, over which is a small room. The whole of this porch, both exterior and interior, is well worked and richly ornamented.

At Ely, the porch is at the west end of the nave, and is sometimes called the "Galilee." As at Salisbury, the interior is groined in two divisions; each side has a double arcade, the arches trefoil-headed, supported on very slender shafts, projecting about 2 feet from the wall; from this porch a double doorway of singular beauty leads to the nave of the cathedral. Too much cannot be said in praise of this porch. Rickman mentions it as one of

THE PORCH, CANTERBURY CATHEDRAL.



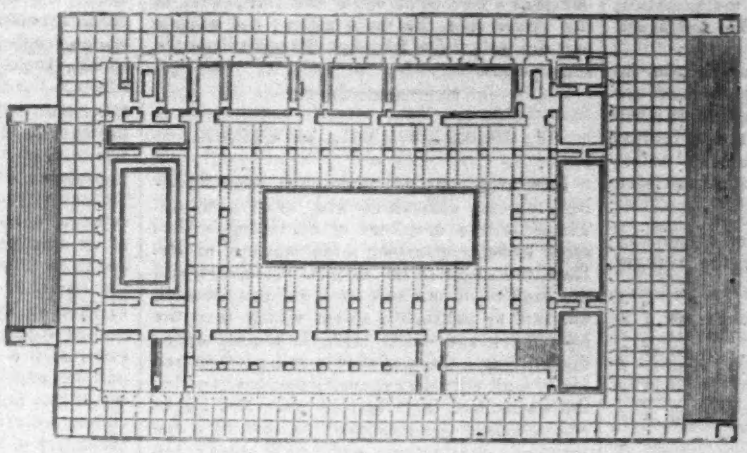
the most beautiful compositions to be found in any English edifice.

We do not recollect any cathedral porch of pure decorated work remaining, (perhaps the nearest to it is that on the north side of the nave at Exeter); but of the perpendicular style so many are to be found, that it is no easy matter to point out the best examples. Perhaps the three most deserving of special notice are those of Gloucester, Beverley, and Canterbury. At Gloucester, it is situated on the south side of the nave, and consists of an entrance, with a large niche on each side of it; over this lower stage are six niches, with rich canopies of beautiful outline. The porch is finished by a pierced battlement of very good design. The buttresses on either side are covered with panelling and niches. This porch has fallen very much to decay, and it is only by the most attentive examination, that much of its detail can be made out.

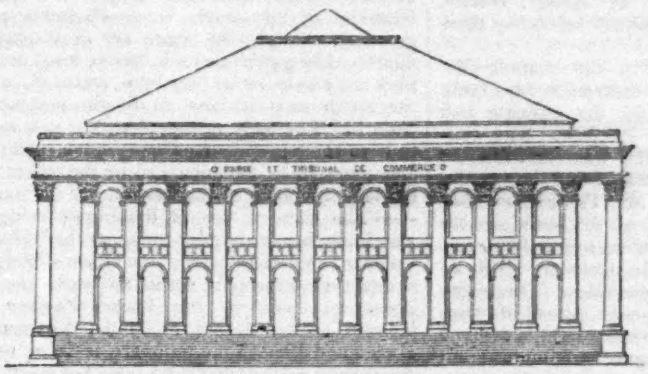
The north porch at Beverley has a panelled front, perhaps unequalled. The door has a double canopy, the inner an ogee, and the outer a triangle, with beautiful crockets and tracery, and is flanked by fine buttresses breaking into niches, and the space above the canopy to the cornice is panelled. The battlement is composed of rich niches, and the buttresses crowned by a group of four pinnacles.

The porch on the south side of the nave at Canterbury (which forms the subject of the illustration), bears some resemblance in its general design to that of Gloucester; the outline is perhaps not so good, but it is more richly ornamented. It was built by Archbishop Chichely about the year 1420. The roof is vaulted with stone, and at the intersection of the ribs are shields of arms; in the centre the arms of France and England quartered; over this roof is a small room entered from the nave. Hasted states that four of the

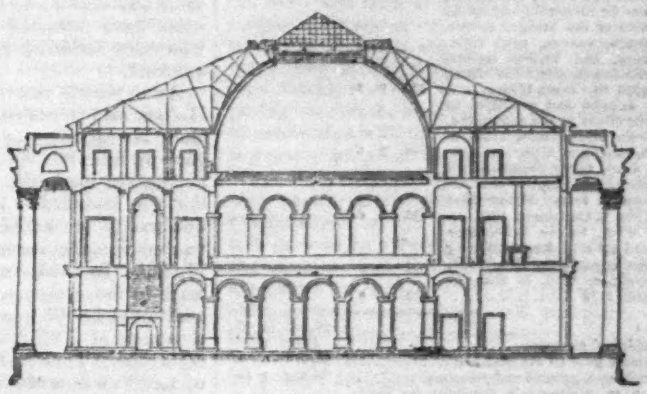
THE PARIS BOURSE.



PLAN.



ELEVATION.



SECTION.

niches were occupied by statues of armed men, representing those who murdered Becket. This seems very improbable, as they would hardly have been placed in so prominent a position. In an old engraving of the cathedral, taken from a drawing made in 1654, the porch is finished by a battlement, but there are now no signs of it remaining. Until lately the centre niche was occupied by a very unsightly sun-dial; this has now been removed, we trust, preparatory to a complete restoration of the porch, of which it stands much in need, possibly more than that at Gloucester. Nearly the whole of the Tudor flowers on the canopies are destroyed, and much of the tracery broken away, so that to obtain a correct drawing of it has required the most minute examination.

It is very gratifying to be able to bear testimony to the improvements which have been made to the exterior of this cathedral within the last few years. The soil, which had accumulated to the height of some five or six feet above the level of the nave, has been carefully cleared away. The old north-west tower, of a style totally at variance with the rest of the nave, has been removed, and a new tower erected. Until within the last few months no good view of the west end could be obtained in consequence of the space around it being occupied by work sheds, &c. These have now been cleared away, and the space laid open to the west wall of the cloisters, so that a much better view is now obtained of the cathedral than formerly. W. C.

THE WELLINGTON STATUE LOCATED.

Lord Morpeth has stated positively in the House of Commons, that the statue is to be erected *in Waterloo place*, and yet the removal of the scaffolding from the arch at Hyde-park-corner is going on. Such waste of money is really too bad. Mr. Barry, it seems, has designed a pedestal for it. We may have something to say on the subject before long.

CRESY'S ENCYCLOPÆDIA OF ENGINEERING.

[second notice.]

A further examination of this elaborate work has strengthened our opinion of the praise due to its author. The chapter on France we have already alluded to as containing much information. We extract from it a brief description of the Paris *Bourse*:—

"The Bourse of Paris, erected from the designs of M. Brogniart, and completed by M. Labarre, is a fine model for an exchange, where the public business of a large commercial city is to be carried on. The external character is that of a Greek temple, having fourteen columns at each end, and twenty at the sides. In the middle is a covered court, where the merchants congregate, and around are a variety of apartments devoted to their especial use: on the floor above, the several tribunals connected with commerce are held.

The roof is of iron, ingeniously contrived to support the skylight of the great court.

There is throughout great simplicity in the arrangements, and beauty of proportion in the architecture, with a sufficient quantity of decoration.

The plan, section, and elevation, explain its character and proportion; it is executed with a hard and durable stone, in a most admirable manner. Its length is 212 feet, and width 128 feet. The roof is formed entirely of iron and copper, and the court or area occupied by the merchants is 116 feet long and 76 feet broad, and it is calculated will contain 2,000 persons. The *agens de change*, or brokers, have a portion railed off for their especial accommodation, and around the great court are the Tribunal and Chamber of Commerce, the court of bankruptcy, and several other halls for the convenience of the merchants and others, and the cost was upwards of 300,000*l.* sterling.

The exchange marks the importance of a city, and should always be erected in the midst of the most thronged part, and rendered capable of receiving not only the native, but all foreign merchants who attend; in its architecture we expect to find that the best talent the country can produce has been employed, and certainly in this example we are not disappointed."

Civil engineering is a modern science in England. In commencing his chapter on works in Britain our author says:—

"It is not possible to form an estimate of the sums expended by individuals and companies during the last century on roads, bridges, canals, harbours, docks, and mining operations, where the services of the engineer were demanded; that the amount exceeds half of the national debt there can be no doubt, and a thousand millions sterling would not be overrating the total outlay. Many of the bridges have cost upwards of a million, and the railways completed considerably more than a hundred millions. How much of this vast sum has been improvidently expended cannot now be estimated, but probably *more than half*. We may consider that to the middle of the last century, the drainage of land, the embankment of rivers, and the extracting of ores, was performed by individuals who had no claim to the title of civil engineers; it was his knowledge in mechanics that induced a member of the Royal Society to select Smeaton as the builder for Eddystone Lighthouse. In the middle ages, towns and cities were walled in, and castles and cathedrals built, by the enterprising confraternities of masons, who travelled from place to place under the direction of a governing body; to them were confided constructions of every kind, and the intelligent head of the lodge acted as architect and engineer; old London-bridge, and the walls which surrounded Dover, Hartlepool, and other harbours, evince their skill in such constructions. The same cause which led to their dissolution buried for a time the knowledge which had rendered such important service to the country; but when internal tranquillity was restored, the whole extent of our coast, and the navigable rivers which discharge themselves into the ocean, received improvements, though this was often effected by men who had obtained a reputation

abroad; vast tracts of land were redeemed from a state of marsh by engineers from Holland: all these important undertakings were conducted in a rude and imperfect manner; the philosopher had not directed his studies to what was useful, and mathematical knowledge was slighted by the unlearned practitioner."

Of the ports and harbours of Britain he gives very full information: lighthouses are fully treated of, especially the Eddystone; and a history and description of the principal bridges are given with much valuable information. From the latter section we learn that:—

"The total cost for building and completing Blackfriars-bridge, and making the avenues thereto, was as follows:—

	£.	s.	d.
To Joseph Dixon, mason	111,569	2	8½
To Dixon and Spencer, carpenters	35,844	8	5
To Messrs. Cox and Co.	10,697	16	7
To William Bryant, Blacksmith	3,555	11	4
To sundry other artificers	9,194	14	11½
	£170,851	13	11½
Surveyor's commission of 5 per cent. on all artificers' bills, and 1 per cent. on the purchases and sales of premises	9,130	1	0
Five years' salary for his constant attendance on the meetings of the committee, and for inspecting and taking care of the bridge, streets, roads, sewers, new buildings, and various matters relating thereto, from 1 June, 1773, to 1 June, 1778	525	0	0
By salaries and gratuities to the clerks of the committee, from Michaelmas, 1758, to Michaelmas, 1778	1,683	2	6
By ditto, to the chamberlain's clerk, for keeping the accounts from Michaelmas, 1760, to Christmas, 1777	693	15	0
By ditto, to the hall-keeper and his man, for summoning the committee, from Midsummer, 1759, to Michaelmas, 1778	433	0	0
	12,464	18	6
Incidental expenses	4,507	6	8
Interest paid on 144,000*l.*	25,920	0	0
Purchase of ground and premises	35,564	1	11
Cash to Watermen's Company for the purchase of the Sunday ferry	12,250	17	6
Total	£261,579	0	6½

The specification and form of contract for London Bridge which are given, will be found valuable precedents.

The amount paid to Messrs. Jolliffe and Banks for this bridge was 425,081*l.* 9s. 2d.; but the whole sum expended on it including the approaches was 1,458,311*l.* 8s. 11½d.

The chapter on timber roofs is a very valuable one (we should have been glad to find more information concerning iron roofs), and includes seventy illustrations, many of which are given for the first time.

"The roof of the hall of Christ's Hospital, London, constructed by Mr. Shaw out of Baltic timber, possesses considerable strength; the walls, 3 feet 6 inches thick, are 15 feet apart in the clear; the rise of the roof in the centre, from the under side of the tie-beam to the top of the principals, is 9 feet 4 inches; it is queen-post trussed, and the tie-beams are held up at five different points, or at every 8 feet 6 inches; the principals are distant from each other 17 feet; the length of the hall is 187 feet and the breadth 51 feet; every precaution has here been taken to unite the feet of the principals with the ends of the tie-beam, and their weight at the ends is partly borne by iron standards, which rest on shoes worked into the wall below. The principals taper, and are 12 inches by 9 inches at the feet, and 9 inches by 9 inches at the top; the tie-beams are 14 inches by 14 inches; the straining piece between the heads of the queens 12 inches by 9 inches; the struts 6 inches by 6 inches; between each pair of principals is a pair of main rafters supported by five longitudinal trusses, and which are also made to carry the ceiling-joist. These longitudinal trusses bear upon the principal tie-beams, which are 17 feet apart from centre to centre; the middle longitudinal truss comes under the ridge, and is very strongly braced; the lower beam is 12 inches by 7 inches, the king-post 6 inches by 6 inches, and head 12 inches by 6 inches; the struts 6 inches by 6 inches; into the head of the kings are lodged the main rafters, which are 7 inches by 5 inches; on these are laid the common rafters longitudinally to receive the boarding, which is laid in the direction of the slope of the roof; so that the lead which covers it is not so subject to derangement as when the boarding is laid the reverse way. The two other trusses on each side are similarly framed, the heights being varied to suit the top of the roof; that of the pairs on each side of the centre is 5 feet from under the side beam to the under side the main rafter; the outside pair are only 2 feet 9 inches in height from the same points."

ST. GEORGE'S HALL, LIVERPOOL.

Few architects get through a large building without difficulties and heart-burnings. Those of the architect of St. George's Hall seem to be approaching; the caprices of Dr. Reid, the wants of the musical professors, and the conflict of opinions in the Town Council, bid fair to produce a storm which may tax his temper and skill. Mr. S. Holme called the building a thing of shreds and patches, and found fault with the expensive manner in which the works had been carried on. Mr. Elmes characterised the statement as that of a dissatisfied contractor, and said that Mr. Holme's conduct, in availing himself of the knowledge he acquired as a contractor to make his attack in the council, was as unprecedented as it was unjust; he added that his wishes had often been thwarted by the Messrs. Holme, who were suffering pecuniary losses by their contract.

At a recent meeting of the council, Mr. Holme said it was clear there must have been many alterations made, for the estimate had gone up from 90,000*l.* to 145,000*l.* The estimate given in April, 1841, was for 92,000*l.*; that was amended to 93,000*l.*; and the ventilation was to be 4,900*l.* Mr. Tomkinson contracted for the carcass of the building for 77,000*l.* In 1843, an addition of 28,000*l.* was made to the estimate. In October, 1843, an additional 1,000*l.* was demanded. Then came a demand of 5,977*l.* for stone instead of terra-cotta caps. Then in February 1844, a demand of 4,380*l.* was made for granite columns; but the cost of the columns exceeded that sum, and this showed that the building was erected in "shreds and patches." Then a demand of 5,000*l.* was made for alterations. In August, 1844, a new estimate was sent in for 145,000*l.* The time for executing the work, and the amount of the estimate, had both been doubled. He had never seen a number of flues turned into one flue without their being smoky. He thought the whole of the rooms on the east side of the building would be exceedingly dark, and that the rooms and passages on that side would have to be lighted with gas even in the day-time. The large room would also be dark.

It came out, however, during the discussion, that some of Mr. Holme's work had been objected to, and that this had led to ill-feeling. It seems to us somewhat anomalous for the contractor to be, in another capacity, one of the architect's masters. It would not be just, however, for us to express an opinion on the subject with only half knowledge of the circumstances. At this moment, therefore, we simply chronicle the statements.

To Test Sulphate of Ammonia.—Sir: I take the liberty of sending you the following simple mode of testing the purity of sulphate of ammonia. At this season of the year, when large quantities of this highly fertilizing manure are being used, and when it is considered that it is sold adulterated to the extent of thirty, fifty, and even seventy per cent., I trust that you will consider this worthy of insertion in your valuable and widely-circulated paper.

I am, Sir, &c., A. Angus Croll.

Chemical Works, Bow-common, Middlesex.

Heat a shovel, or any plate of iron, to redness, and place upon it a portion of the salt of ammonia. If the salt be pure, the whole will go into vapour; if adulterated, the impurity will remain on the plate of iron.

New Terminus, Liverpool.—The London and North-Western Railway Company is about to rebuild the main terminus at Liverpool, under the direction of Mr. Tite. Mr. John Jay, of London-wall, London, is the contractor for the works, at the amount of 36,000*l.* A great portion of the work is to be completed in a few months, and the whole within ten months from commencing.

NOTES IN THE PROVINCES.

The comprehensive 'public building' scheme at Sheffield, lately noticed in The Builder, seems to have already led other towns to 'look out,' prospectively, for similar public accommodation on the great scale. Cambridge proposes to have not only her "assembly-rooms, reading-rooms, lecture-rooms, public offices," but her "post-office, excise-office, and other public institutions" comfortably grouped together in the same constellation, on the very site, too, of the townhall itself, which, it is presumed, will be also comprehended within the extensive area of so grand a scheme, if thus swallowed up and absorbed within the limits of its ample structural organism. The funds are to be raised on the joint-stock principle, to the amount of the necessary sum, namely, 11,000*l.* or 12,000*l.*, which will, it is expected, realize at least 4 per cent. to begin with, and eventually a larger return. Accommodation will be provided in the projected compound institution not only for mental food in reading-rooms, lecture-rooms, &c., but also for refreshment both of body and mind in rooms for restaurants, a tavern, &c. By the way, it is not Sheffield alone, but Nottingham, at least, along with it, that has had the merit and the spirit to take the initiative in this great structural movement.——The restoration of St. Nicholas' Church, at Yarmouth, is satisfactorily progressing, though the funds are quite inadequate. The gallery, which has so long occupied the whole nave, has been removed, and the north aisle is thus no longer separated from it. The body of the church is now said to have some grandeur of appearance, and the *tout ensemble* to be enhanced by the effect of the lancet window at the west end of the nave. ——The state of two of the county bridges was lately brought under notice at the Suffolk sessions, held at Beccles. St. Olave's bridge, a doubtful property it seems in more senses than one, since no one knows whether it belongs to the county or to the Yarmouth Haven and Pier Commissioners, is in a very insecure and dangerous state, a part of the piers under water being entirely gone. East bridge, a wooden erection in Westleton parish, too, is broken down and must be rebuilt.—— The fund for the erection of Pawnbrokers' Almshouses, at Stratford, Essex, has been realized to the extent of 3,000*l.*, and the ground has been purchased for a site.——A coloured drawing of a plan for the proposed esplanade at Ryde, the work of Mr. Thomas Hellyer, architect, has been exhibited of late at Ryde. It represents the esplanade three miles in extent—on a different and it is alleged an every way superior plan to that sought to be carried out by Act of Parliament.——The foundation stone of the new hospital at Portsmouth is to be laid by H. R. H. the Prince Consort.—— The gas movement is pervading the choice little Isle of Wight like every where else. The inhabitants of Ventnor, in public meeting lately assembled, have been formally expressing their conviction, "that the introduction of gas would be a great public benefit, and tend to the further improvement of the town;" a "resolution" merely preliminary, it is to be hoped, to immediate measures of practical description.——The completion of the inner or floating dock at Southampton is likely, it is feared, to be postponed till next spring.—— The new county prisons at Winchester are begun with the excavations for the foundations. The County Bridewell is to be converted into materials for the new building.——The Abergavenny Charity Trustees have agreed to advance 500*l.* towards the erection of a school-room for poor children. Mr. F. H. Williams has kindly offered to give the stone necessary for the building, and the trustees are to pay 50*l.* a year towards the master's salary.——At a Liverpool select vestry, last week, when a report on the new workhouse was read, "Mr. Earle," according to the *Mail*, "said that a more abominable plan than that of the new buildings at the workhouse he had never known. Until Mr. Wightman had gone about to collect the details of his report, not a single requisite had been provided for the inmates. Think of one or two water-closets only for 400 or 500 people! In short there was nothing provided. All the money was spent on ornamental pinnacles. Rector Brooks said the Hon. Mr. Clements, the Assistant Poor Law Commissioner, might be said to be the princi-

pal architect, for he had, over and over again, been looking at the plans. Mr. Earle said he was unable to defend Mr. Clements, because a single convenience had not been provided. He had had occasion to correspond with the hon. gentleman, and he had told him plainly the parish were in a pretty mess."——The advancing sounds of constructive implements, 'viâ Worksop,' on the Manchester, Sheffield, and Lincolnshire Junction Railway, are awakening Worksop to a sense of its growing wants. The subject of increased accommodation for general market purposes has been under consideration. A site has been pointed out, and a plan has been drawn up by Mr. John Ellis.——"We have reason to believe," says the *Doncaster Gazette*, "that Mr. E. T. Copley, of Nether Hall, has munificently offered to erect a beautiful painted window in the north transept aisle of the parish church, where the north window is now situate, conditionally that the gallery in the north transept aisle be removed and necessarily that in the south transept also. The removal and clearing away of these two galleries," it is added, "would present an aspect most beautiful in this portion of the church, and would bring out in their true beauty the lofty transept arches, the proportions of which are sadly disfigured by the galleries which at present intersect them."——Halifax, we have just observed in a provincial paper, is determined to follow forthwith in the wake of Sheffield, Nottingham, and Cambridge, towards the establishment of the new and noble order of public club or communitarian chambers, which, we verily believe, were first of all suggested by the various paragraphs about "club chambers," emanating from THE BUILDER, and showered abroad, in manifold repetition, through the newspaper press, "like bright coins of a new and unknown mintage," as a cotemporary, in words at least to the same effect, poetically described them. At Halifax it is proposed to form a company, in 500 shares of 20*l.* each, for the purpose of erecting, in some central spot, a public building of this comprehensive and imposing order, in which may be clubbed together, or concentrated, the town-hall, the different boards and offices constituting the town's government, accommodation for public companies, &c. &c; so it now only remains to be seen whether the enterprizing spirit that has projected this new mode of attaining to architectural magnificence by conjoint and economical means, will be sustained until its noble object shall be fully realized. Had the idea been only broached in and confined to one of our municipal communities, the chances are that it might have ended in idea, as it began, but there seems to be a spirit of emulation at work which will probably be mutually progressive till the good work be accomplished in all. —— Two national schools, built at South Stockton, at a cost of 800*l.*, will be opened after Easter.——A correspondent of the *Gateshead Observer* complains, of the admitted "advantages conferred on Manchester by the transference of the gasworks to the corporation," that "the gas consumers pay for the public improvements effected, by the corporation, from the gas profits." But why should they not? What is Manchester? and who are its gas consumers? Manchester is a millocracy, and its great gas consumers are the mill-owners themselves, and all dependant on them, whether in mills or shops or dwellings; and why, therefore, should not they especially pay for the improvement of property which is actually in general terms their own? Besides, the whole community at large, of every town, are now becoming gas consumers, and the greater part of the profits thus derived from the administration of one beneficent improvement need hardly be grudged by those well able to afford them, when they consider, not only that these very profits are expended in the administration of other improvements of an equally beneficent order, to the increase of the value of their own individual properties and business, and to the increase of the beauty and accessibility of their own towns and dwellings; but that even if not so applied, the greater portion of these profits, at least, if not the whole, will still be abstracted from *their* pockets, although —unprofitably to them—transferred exclusively to the pockets of those for whom alone this correspondent seems to have any real sympathy, manifested, though it be, under guise of sympathy for those who, after all, even at some little sacrifice, in other respects well compensated, probably do prefer to support their own corporation, which expends *all its* profits in reflecting back new benefits on themselves, much rather than to support a monopolist company, which expends *not one single farthing of its* profits in any such benefits either to them, or, indeed, to any one beyond the sphere of its own private families or relations.——Nearly 1,000,000 able-bodied men—chiefly heads of families more or less numerous—have by this time been attracted, mainly from the reproductive cultivation of the soil, to the almost wholly unproductive, or worse than useless, "public works" in Ireland. A return of the daily average number thus employed for the week ending 27th February, gave, for Leinster, 129,258; Munster, 293,886; Ulster, 87,745; Connaught, 197,339; Total, 708,228. The government expenditure on Ireland at present, has been estimated at almost £1,000,000 a month! while the whole annual income of Ireland amounts to only £13,000,000! Mr. Labouchere, in reply to the allegation that the labourers thus led to depend on the public works for a sustenance to their families only earned eight pence a day, states that in task-work the wages are fourteen pence a day, but that otherwise eight pence is certainly the rate of payment; only, where destitute families require it for their support (and are capable of working we presume), more than one member is employed, on application, at the same wages.

ELECTRO-TELEGRAPHIC PROGRESS.

INTIMATELY and universally associated with railways though the electric-telegraph has hitherto been, it is only now, notwithstanding its wonderful progress in general utility, that such a connection with the system which has fostered it, as shall amply repay to that system the deep obligations under which it already lies towards this its benefactor, is likely to be fairly established. The idea that the electric-telegraph might be made to conduct to head-quarters—that is to the directing minds at work on railways, whether in stations or in trains,—a series of nerve-like intimations of the movements of the current trains themselves along their arterial courses, so that all possibility of collision might be avoided and innumerable benefits be otherwise conferred by the telegraph on its foster-parent, is an idea not altogether new; but it is only now for the first time, so far as we are aware, that such an idea is in course of actual realization. On the Tours and Nantes line, says the *Echo Saumurois*, an apparatus is at this moment in course of establishment which consists of an iron-wire extending from one end of the line to the other, and through which an electric current is continually to pass, while, by means of small pistons, placed at intervals of 200 yards, the passage of a train in motion at each point of the line will be indicated to the fixed machine, each piston, by its movement, interrupting the electric current for a moment of time [probably varying in length or repetition] and thus designating the number of the post before which the train is passing at the moment. "By these means, the director of the fixed machine will receive information almost every second as to the speed of the train in motion, and as to the position occupied by it. It is unnecessary to insist on the importance of such an indication," adds the *Echo*. "By always knowing the exact position of a train on its passage, it will enable the conductor to moderate the speed of the trains, and to send assistance with greater promptitude in case of accident, so as to prevent the interruption of the road as much as possible." The telegraph, in its more general and external relations, too, is making rapid inventive progress towards the perfection of simplicity, or rather the simplicity of perfection. According to the *Ipswich Journal*, which gives a long account and high commendation of Mr. Bain's inventions,—amongst which, by the way, is incidentally notified the immediate erection of his electrical clock in the tower of Wenham church, with power of motion to be incessantly maintained by a perpetual electric current derived from the earth,—telegraphic "needles and dials will speedily be exchanged for pencils," and note paper, in all the electro-telegraphic apparatus throughout the queendom, and that, too, even in spite of the evidence given before the Commons committee, that "if an angel from heaven were to say Mr. Wheatstone did not make the best of telegraphs, he would not be believed." Mr. Bain has just got a patent for a new modification of the telegraph, which, says the *Ipswich Journal*, will ere long speak for itself, or write for itself at least, by a simple and unerring method This it is to do by the metallic marking of copper points in galvanic circuit upon paper, drawn by clock work over a roller, with *intervals*, as the current is received or sent, and repetitions, two to four of which, made by either or both of two copper pointers, rapidly note down the equivalents of the various alphabetic characters. By another modification, in which punches are made at once to cut the letters of a word out of thin paper, a speed of correspondence is attainable "that bids defiance to the most adroit telegraphists." And moreover a series of *stamps*, correspondent at one terminus to the punching process at the other, and productive of it, may be set to any series of letters, and correspondence thereby kept up by telegraph without the possibility of any one being able to interpret the meaning without the key. Wonderful as all this is, however, the very *beau ideal of* electro-telegraphic correspondence seems to be that to which we lately made some slight allusion, whereby types may be set up simultaneously in different towns, through the operation of composing machines, such as that of Delcambre, in connection with the telegraphic wires. This is gravely proposed by Mr. Hyde Clark, who himself invented a composing machine, and who shews out in detail how the "electro-composing-telegraph" might be worked; and it is curious to observe how, in pointing out the purposes and benefits derivable from this mercurial messenger, there is ever an inevitable harping on robbery and commerce—thieves and share-brokers—trickery and share-lists—how hand-bills describing thieves might be printed and distributed to policemen in all quarters in no time, and how share lists quoting stock in London at half-past three might be showered amongst the share-brokers in Liverpool by four, &c., and so forth.

MUSEUM OF ART FOR SHEFFIELD.

ON the presentation of a memorial from the committee of the Sheffield Athenæum and Mechanics' Institution, praying the council to erect a museum of art; and the consequent motion of Mr. Alderman Dunn, that this memorial, with others to a like effect from the Literary and Philosophical Society, and the School of Design, be referred to a committee to report to the council, a debate ensued, and various amendments were proposed, all hinging on the probability that ere long "a large building for general things to be amalgamated in" must inevitably be erected, and that it became a question, therefore, whether a separate building for a museum of art ought to be erected at all, or whether it ought not rather to be embodied in the noble edifice already projected, together also with the Mechanics' Institution itself, the Athenæum, and the School of Design, which two former institutions, however, were about to be built separately, and which latter had so thriven of late, that it now also required larger premises and a museum. There seemed to be a general sentiment in favour of the concentration of all the public building wants of the town in one focus. As for the institution of a separate museum of art, it was a question whether the Act of Parliament which authorized town councils to borrow money, erect buildings, buy casts, and pay interest out of borough rates, was sufficient for the satisfactory establishment of such an institution at Sheffield, on the basis of a maximum rate of a single halfpenny a pound, yielding only 500*l.* a year. The object of several of the council was to authorize the committee to consider the question of the amalgamation of at least such institutions as the Athenæum, Mechanics' Institution, School of Design, and Museum of Art, in one handsome building, which might be an honour to the town, at a time when town was emulating town, and nation emulating nation, in intellectual and moral advancement. The original motion, however, was carried by a majority of 21 against 10—3 neutral.

CONSTRUCTION OF SEA WALLS AND BREAKWATERS.

This subject, to which we alluded in our last, was renewed at a meeting of the Institution of Civil Engineers, on the 9th inst., in a paper by Mr. Scott Russell.

Although agreeing as a general proposition, with the truth of the observation, that it was impossible to lay down any one undeviating rule for a form of sea wall which should suit all cases,—the author had, from long and careful experiment, and examination of various localities, endeavoured to classify certain forms of artificial constructions, and to adapt them to certain cases, having reference in each case to the action of the waves to which they were to be exposed. His first process was to examine the action and character of the several kinds of waves, deducing as a given axiom, that,—First, the common form of waves is cycloidal. Second, the motion of the waves in a disturbed state is circular, and in a vertical plane. Third, the water near the top of a wave moves the same way as the wave itself. Fourth, the water in the hollow between the waves is receding. Fifth, the power of a wave is exactly in proportion to the height of its crest above the hollow between the waves. Sixth, the greatest power a wave can exert is at the moment of the crest breaking over into the hollow. Seventh, waves in the British seas have rarely been seen of a greater height than 27 feet above the hollow, and 32 feet may be taken as their greatest unbroken height; those of the Atlantic being stated to range higher. Eighth, waves have never been seen of the full depth of the water forming them, hence it is deduced that the greatest force waves can be exposed to may be determined by the depth of the water they are placed in. Ninth, there are two or more classes of waves,—wind-waves, short, high, and superficial; and storm-waves, which are long, low, and deep. Tenth, the depth of agitation caused by a wave is in the ratio of its height and length conjointly.

Reasoning upon these data, the paper then proceeded to examine two classes of hydraulic works. First, those which are designed to act upon the waves; and, second, those whose structures are exposed to the sea without any design of controlling it, but only to guide it under particular circumstances.

Of the first class are sea walls, piers, and other sea defences intended to restrain the action of the waves; for the forms of which a number of designs were given, ranging between the flat slope, with a foreshore, and the vertical wall. Of all these the preference was given to a wall having a concave or cycloidal curved face, to carry the wave up without breaking; overhanging coping curved on the underside to return the wave upon itself, and a recessed parapet on the outside to prevent the wave from being thrown inside. For breakwaters, whose object it was to resist the waves and produce still water within side, the best mode, under all circumstances of locality, variety of materials, and cost, appeared to be the depositing of the large and small materials, and allowing them to find their natural slope under the action of the waves.

Of the second class, are works designed to direct the scour at low water, but which are quite covered at high water; the foundations of lighthouses, &c.—the object being to oppose the least possible resistance to the waves, and to suffer the least from them. Groynes, embankments, and other works intended to be under high water, also coming under this class; the best form is the parabola with the foot curved outwards on each side—the apex being raised or lowered, and the base proportioned to its application. This form being extended upward approximates to that of the Eddystone, Bell-rock, and Skerry-vore lighthouses, which have withstood the action of heavy seas so successfully.

The vertical wall was condemned for many satisfactory reasons; the cost of workmanship, the expensive character of the materials, the liability to destruction, if a breach be made, and the unsatisfactory action in consequence of the waves making a clear breach over them in heavy weather.

In the discussion that ensued, many interesting illustrations were given of the truth of these positions, derived from the works at Whitehaven, those on the South Devon Coast, and those at Hartlepool, in which latter case the strong red marl, dry punned, mingled with small stone, and faced with pitching, had been satisfactorily employed at a very small cost for the construction of piers.

Correspondence.

PULPITS IN REFECTORIES.

Sir,—In your last week's paper a query appeared (page 121) in Professor Willis's account of conventual buildings at Canterbury, which said:—"A question was asked as to the uses of pulpits in refectories." In all Roman Catholic institutions of a collegiate nature, while the members are at meals, readings of a theological or other improving nature are always in use, as may be witnessed at Oscott College at this day.

A place like a pulpit or tribune was therefore no inappropriate appendage to the room in which refection took place. And this, I beg to suggest, is the reason why a pulpit is found in the old refectory at Canterbury.

I am, Sir, &c.,
W. Mason.

Neiton, March 16, 1847.

RUSSELL'S SPEEDY "LOUIS."

Sir,—I sent you, a few weeks back, a sketch and description of the above invention, which was inserted with some errors I intended to correct. First, its name "Lewis"—which should be "Louis," being either dedicated to, if not (as reported) invented by, that patron of arts Louis XIV. Secondly, the engraver, with a view to improve my drawing, has altered the shape of the ring from *an egg form* to a perfect *circle*, which would in its application destroy the important advantage mentioned; i. e. should the hole be cut *too large*, by reversing the smaller end, the dovetail is considerably extended. In your last week's number, a correspondent signed "J. James, Lambeth," asserts that he is the father of this invention, and, despite of my statement that it was designed, at the proportions given, for light weights only, "that he made lewises of the same kind in 1845, and tried them with some of the blocks of stone used at the British Museum weighing about *ten tons*, and that he abandoned the plan, as he considered there was a risk:" adding "lifting the stone 15 feet *we* surged it three times" (a very unmasonlike act), "and upon the last occasion the block slipped from the lewises, which he considered a failure." Mr. Farrer, who is the sole superintending mason at the works of the British Museum, and who has been so from its commencement, declares that *louises* of that description were never used or tried upon those works until he tried these for me and found them efficient to their purpose, but, like all novelties, they require to be rightly understood, as in the case of slight ashlar, when the stone is set, to remove the louis, the ring should be reversed to the side, in lieu of knocking it down with a hammer at the risk of flushing the stone, which was the only evil he saw; and that he deemed the principle was good for any weight, if made proportionate.

I am, Sir, &c.,
H. H. Russell.

The Louvre.—A new plan has lately been proposed by M. Brunet de Baines for terminating the Louvre. All the plans hitherto submitted by architects have provided for the union of that magnificent edifice with the Palace of the Tuileries—a task of great scientific difficulty, on account of the two structures not being in a straight line. But the new proposition proposes to separate the two buildings, by putting the Rue de Richelieu in direct communication with the Pont des Saints Pères, leaving on one side the Tuileries, and erecting on the other the new Bibliothèque Royale. By this arrangement, the project now under consideration, of building a new opera-house on the Place du Palais Royal, would be set aside; and it is suggested to occupy the site of the projected theatre by a *château d'eau*, which would be of great utility in the event of fire. The space between the new street and the Tuileries is proposed to be laid out in a semi-circular form, and occupied with various useful buildings, harmonizing with the adjacent edifices. It is recommended that the new Bibliothèque shall be of the same style of architecture as the Louvre, with, however, a complete isolation.—*Galignani.*

Miscellanea.

Value of Portraits.—Perhaps, said the Rev. Sir J. Page Wood, in a lecture on painting delivered recently at the Chelmsford Literary Institution,—perhaps there are no representations which interest so strongly the curiosity of mankind as portraits; a high degree of pleasure, of which almost every one is susceptible, is experienced from contemplating the countenances of those men who, by their genius or their virtues, have been entitled to the esteem and admiration of future ages, who are the speaking records of mortals who have put on immortality. It is this power which brings before us the forms of the mighty and beautiful of past ages. From the pencil of Holbein we have the representation of the eighth Henry, and the lovely and speaking face of his victim wife, Anne Boleyn. By this art we gaze on the enthralling beauty of the Scottish Mary, the stern features of her reprover Knox, and the spirited countenance of the maiden Queen, and the galaxy of wit and learning which illuminated her court. From Vandyke we have the graceful and wilful Henrietta of France, and the portrait of the unhappy Charles. His image yet lives by the hand of that great master, undimmed by time, uninjured by accident; and at the distance of 200 years, men may gaze on that cold calm face, that proud but complaining eye, and compare the melancholy features with the mournful tale. In our own time, with what interest do we contemplate a faithful portrait of the veteran chief, who has made our name glorious over the whole world; of the patriot who has contested for our rights; of the statesman who strives to

> "Scatter plenty ov'r a smiling land,
> And read his history in a nation's eyes."

Durham Cathedral.—Many alterations have lately been made in this very interesting edifice. The masonry which separated the celebrated Galilee from the nave has been removed, so as to give an uninterrupted view of the whole of the building; the incongruous font has been taken away, and one of Norman character introduced; and the woodwork, which cut off from the transept the aisles on each side of the quire, has been taken down. The altar screen, too, has been restored, and the Norman chapter-house considerably improved. A writer in the *Athenæum* says, that the Chapter, which met on the 19th, resolved upon several alterations. The chief of these is the removal of the organ, and the screen on which it stands. At present, the organ stands over the entrance into the quire; it is soon to be placed under one of the arches on the north side of the quire, opposite to the bishop's throne. The present screen, with its unsightly and most inappropriate carvings of apples, melons, and onions, is to be taken down, and its place supplied by one the size, character, style, and material of which are all open for consideration. By this alteration, when completed, the visitor will be enabled to see the whole length of the building, (which is now interrupted by the organ,) and to grasp its proportions, so as to take in the symmetry of its component parts, and to understand it as a whole.

Proposed Bridge across the Thames.—An inquiry into the merits of the proposed bridge across the Thames, from Lambeth Church to Westminster, has taken place at the instance of the Commissioners of Woods and Forests. It appears that Sir Samuel Brown proposes to erect the structure, as a toll-bridge: it is to be on the suspension principle, and is estimated to cost 90,000*l.*

Society of Antiquaries.—The auditors, in their report on Thursday night last, made some strange revelations as to the financial condition of this ancient society. After a long discussion the report was ordered to be printed. The recent agitation is producing good fruit.

Statue of the Queen Dowager.—It is proposed to erect a statue in the city, in honour of the Queen Dowager, by public subscription.

The Existing Remains of the Ancient Britons, within a small district between Lincoln and Sleaford, described. By the Rev. G. Oliver, D.D. Spencer, 314, High Holborn.

This *brochure*, small as it is, is a valuable addition to topographical literature. British tumuli, the Drake stone, and Biurd's leap, are the principal subjects discussed, and these are illustrated with much learning and taste.

PROJECTED WORKS.—Advertisements have been issued through the current newspapers calling for contract-tenders for the erection of new churches at Leek, Bulby, and Coventry; schools at Wantage and St. John's-wood Park; barracks at Portsea; a new workhouse for the Whitchurch union, Hants; several magazines, storehouses, workshops, shed, walls, basin, pier, wharfs, tanks, &c. &c., near Plymouth; wooden quays (498 feet long) at Belfast; new buildings at Kirkdale House of Correction; a range of houses near Shoreditch: also for alterations and additions to the King's Arms, Woodbridge; the Tattingstone House of Industry; and Cadder Manse and offices; for making three miles of turnpike road and building bridges in Perthshire, &c.; paving and repairing carriage ways and pavements of fourteen parishes at Cambridge; paving and repairing roads and supplying Guernsey granite, gravel, core, ballast, and flints at Islington, and for a supply of stone for blocks, inverts, troughs, &c., at Grimsby Dock; also for the execution of the whole works on 11 miles of Shrewsbury and Birmingham, 11 miles of Midland; 3 and three quarters miles of London and North-Western at Clifton; and for 36,000 bolts and nuts, and 360,000 spikes, also 40 sets of points and crossings for Dublin and Belfast Junction; and for 2,500 tons of malleable iron rails, 800 tons cast-iron chains, and 36,000 sleepers for Glasgow and Monkiands Junction line of railway.

ECONOMY IN HEATING ROOMS.—A correspondent of the *Gardener's Chronicle* says that his hall is sufficiently heated by the dining-room fire, which fire-place, at the sides and back, consists of fire-bricks or slabs of 3 inches thick, which, when red-hot, contain a great heat; and at the back of which, in the wall (next the hall), is a kind of hot-air closet about a yard square, and 5 or 6 inches deep, as the wall will admit; at the bottom of this closet is an air-brick, to let in the cold air, and at the top is another, to allow the hot air to escape into the hall. My library is also similarly heated by the kitchen-fire, and I am satisfied this plan would admirably suit a green-house, where it could be applied. I had mine so constructed when I built my house.

PROPOSED STAINED-GLASS WINDOW IN OXFORD.—Some excitement has been caused in Oxford by the refusal of the vestry to allow a stained-glass window, executed under the direction of Mr. Pugin, to be set up in St. Mary's. It was conceived that the tendency of such windows was to withdraw the mind from the Creator to the creature, and the vestry were unanimous in considering, that the attempt on the part of the committee (embracing the vicar, the principal of Brasenose, and the master of University) to set up the window, was an endeavour to Romanize the church without their knowledge or consent.

GOVERNMENT AND THE CEMETERIES.—If it be true, as generally stated, that one of the new sanatory measures of Government is to positively prohibit, by statute, any further burials in the crowded grave yards of populous districts, a very great change will take place in the value of land near large towns, of sufficient size for cemeteries, inasmuch as the difficulty of finding land distant 300 yards on all sides from houses of 50*l.* per annum value, is very great. In fact, the Woods and Forests declare they have not, near London, more than one or two sites for cemeteries in their power. —*Morning Post.*

THE NEW HOUSE OF LORDS.—Orders have been given to admit no persons to the new houses until after Easter, to enable the workmen to complete the House of Lords for business. At the end of the present session, arrangements will be made to give the public an opportunity of seeing the new building.

THE THREE GREAT QUESTIONS OF THE DAY.—Great social improvements are required:—public education is lamentably imperfect; the treatment of criminals is a problem yet undecided; the sanatory condition of our towns and villages has been greatly neglected. —*Lord John Russell.*

COMPETITION AT DEAL.—We mentioned some time ago, that it was proposed to build a new church in Deal. We understand that Messrs. T. Little, Jerrard, Thompson, Hay, Johnson, and Caveler, have been invited to send in designs for it.

SUBSTITUTE FOR PAINT.—The following is taken from the appendix to Young's "Farmers' Calendar," edition 1815:—Take fresh curds, and bruise the lumps on a grinding stone, or in an earthen pan, or mortar, with a spatula. After this operation, put them into a pot, with an equal quantity of well slaked lime. They will become thick enough to be kneaded; stir this mixture well, without adding water, and you will soon obtain a white-coloured fluid which may be applied with as much facility as varnish, and which dries very speedily. But it must be employed the same day, as it will become too thick the day following. Ochre, Armenian bole, and all colours which hold with lime, may be mixed with it, according to the colour which you wish to give to the wood; but care must be taken that the addition of colour made to the first mixture of curds and lime may contain very little water, else the painting will be less durable. When two coats of this paint have been laid on, it may be polished with a piece of woollen cloth or other proper substance, and it will become bright as varnish. It is certain that no kind of paint can be so cheap; and besides other advantages, in the same day two coats may be laid on and polished, as it dries speedily and has no smell. If it be required to give it more durability in places exposed to moisture, do over the painting after it has been polished, with the white of an egg; this process will render it as durable as the best oil painting.

EFFECTS OF A CHEERFUL HOUSE.—A neat, clean, fresh-aired, sweet, cheerful, well-arranged, and well situated house, exercises a moral as well as a physical influence over its inmates, and makes the members of a family peaceable and considernte of the feelings and happiness of each other; the connection is obvious between the state of mind thus produced and habits of respect for others and for those higher duties and obligations which no laws can enforce. On the contrary, a filthy, squalid, noisome dwelling, rendered still more wretched by neighbours and its noxious site, and in which none of the decencies of life can be observed, contributes to make its unfortunate inhabitants selfish, sensual, and regardless of the feelings of each other; the constant indulgence of such passions renders them reckless and brutal, and the transition is natural to propensities and habits incompatible with a respect for the property of others or for the laws.—*Topic.*

IMPORTANCE OF SPACE IN WORKSHOPS.—Among 104 men (letter-press printers), having less than 500 cubic feet of air to breathe, there were 13 who had spit blood, 13 who were subject to habitual catarrh, and 18 to other diseases, making a total of 44 invalids; of 105 men, who had from 500 to 600 cubic feet of air to breathe, five had spit blood, four were subject to colds, and 23 to other diseases, making in all 32 invalids: while, out of 100 men, having more than 600 cubic feet of air to breathe, four only had suffered from spitting of blood, two from catarrh, and 18 from other diseases, making a total of 24 invalids.—From *Guy's Evidence before the Health of Towns' Commission.*

TO CORRESPONDENTS.

"*C. D. L.*"—The roadway and parapet of Waterloo-bridge were formed nearly level. It was one of the earliest bridges so constructed.

"*John N.*"—We are opposed to the system of employing artists to put in flaring skeis and landscapes to architectural drawings. Exhibitors at the Royal Academy have a free admission,—and to the lectures also.

"*Student.*"—Professor Cockerell will not lecture in the Royal Academy this session.

"*R. M. P.*"—The drawing shall be returned, with thanks.

"*W. W.*" (Bedford).—Unless there be a local act empowering the builder to enter adjoining premises, we think he is not at liberty to do so in the case stated.

"*T. G.*"—If we should find ourselves in Oxford shortly we will visit the works. It is too far to go purposely.

"*W. B.*" (Kent)—The accumulation of carbonic acid gas beneath the sound-board might have the effect spoken of, but we would not say so without seeing it. Does the preacher feel less exhaustion in another church?

"*Plaster of Paris.*"—A correspondent says,—"Plaster of Paris now in use is generally of inferior quality; probably some of your correspondents can state the best system of baking plaster and preparing it for use."

"*F. H.*"—Pasley "On Limes and Cements."

"*Ancient London.*"—We are compelled to postpone Mr. Archer's paper till next week.

"*M. D. W.*" next week.

Received.—"An Architect" (London). "M. I. B. A." "B. and B." (Liverpool). "J. T." "T. I. M." "W. W." "A Subscriber" (Leicester). "A Member" (Ipswich). "P. W. M." "J. R. F."

"*Books, Prices, and Addresses.*"—We have not time to point out books or find addresses.

*** Correspondents are requested to address all Communications to the EDITOR, 2, York-street, Covent-garden.

TO PROVINCIAL READERS.—In reply to complaints of the irregular delivery of THE BUILDER in provincial towns, we beg leave to state that it is invariably published by seven o'clock on Friday morning; and that the irregularity complained of rests entirely with the parties through whom it is obtained.

TENDERS

For the erection of the Talbot Tavern, Gravesend: Mr. Belcher, Furnival's Inn, Architect.

Lyllestone, Gravesend	£2,095
Stevens, ditto	2,000
Parrick, Belvedere-road	1,925
Cobham, Gravesend	1,896
Wood, ditto	1,895
Sanden, Fish-street hill	1,845
Parker, Whetstone	1,844
Machell, Peckham	1,725
King, East Greenwich	1,324

MEETINGS OF SCIENTIFIC BODIES

During the ensuing Week.

MONDAY, March 22.—Institute of British Architects, 15, Grosvenor-street, 8 P.M.

TUESDAY, 23.—Institution of Civil Engineers, 25, Great George-street, 8 P.M.

THURSDAY, 25.—Royal Society, Somerset House, 8½ P.M.; Society of Antiquaries, Somerset House, 8 P.M.

FRIDAY, 26.—Archæological Association, Sackville-street, 8½ P.M.

ADVERTISEMENTS.

TO CAPITALISTS.

NEW and Extensively Useful Invention of Importance, especially to Carpenters and Cabinet Makers, Ship-builders, &c.

The Inventor is desirous of obtaining a Partner to work the above as a Patent article, for which he has taken the preparatory steps, and which will not need an outlay of more than about £400. It cannot fail of a very profitable return, as when known it must become in universal request, as it will be a great saving to operatives in general, or the Inventor will part with his rights therein for a moderate remuneration.

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FRENCH PAPER HANGINGS.—The ONLY WHOLESALE DEPOT wherein is concentrated ALL the choicest productions of all the Continental Manufacturers, is at Messrs. MARKS & CO.'S, 89, Princes Street, Leicester Square, established 1832, where the Trade may be supplied from an Immense Stock of NEW SPRING PATTERNS, at prices that will DEFY the GARBLED PIRACY that at present exists.

PAPER-HANGINGS to the TRADE.—French Papers superseded.—Messrs. HENNELL and CROSBY, Paper Stainers, Queen-street, Southwark-bridge-road, beg to inform the Trade that they can enable them to sell Satin Papers, Elegant Designs, at 2s. 6d. per French piece, Retail.—Cheapest house for Panel Decorations and Clouded Papers.

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WILLIAMS'S PATENT SLATE RIDGES and HIPS.—The above article is recommended as the best and the most suitable covering for Ridges and Hips of slated roofs ever invented, possessing a solid Roll of various sizes, more elegant and durable than lead, and 20 per cent. cheaper.—Sold by Messrs. J. and J. SHARP, Slate Merchants, Tenby-street, and Mr. RICHARD COOPER, Slate Merchants, Belvedere-road, Lambeth, London. May be had also of all Country Slate-dealers.

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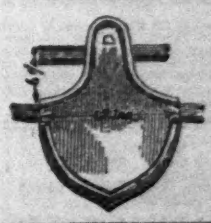

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London, 125a, Piccadilly, Feb. 27, 1847.

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PERSONS requiring LOANS by way of MORTGAGE, or otherwise, upon any available security, may at all times procure an advance to the extent of from £100 to £150,000, or so much as the property will bear, by applying to Mr. BRAY, surveyor, at the offices as above.

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By Her Majesty's Royal Letters Patent

WILKINS'S "SILENT" WATER-CLOSET.—To Architects, Surveyors, and Builders.
Gentlemen,—Your attention is respectfully invited to the above "Closet," the peculiar qualities of which are, that it is perfectly silent in the action of the Machinery and the supply of Water, and may be fixed in any convenient place in the House, without communicating the sound of a Water-closet to any of the adjoining Apartments, while it retains all that is useful in the ordinary Closets, it does away with the Bell Levers, Wire, Cranks, &c., which cause much of the noise to which the old closets are liable. The want of a Water-closet more suitable for the present mode of fixing them in the internal parts of Dwelling Houses and Office Apartments, has long been felt, and the benefit to be derived from one that is "Silent" in the action of the Machinery and supply of water, is sufficiently obvious to render unnecessary any lengthened comment in its favour.
This Closet is simple in its construction, the whole of the apparatus (including the trap), being completed between the floor of the room and the seat of the Closet, thereby rendering it quite easy to remove any factory Closet and fix the "Silent" one in its place, without interfering without the trap, which is generally embedded between the floor and ceiling below the Closet. The "Silent" Closet is also clean, and so free from any effluvia, as to allow of its being fixed in any bed-room (where there is a convenience of fixing a pipe down the outer wall of the house) without occasioning the least unpleasantness whatever.
May be viewed Daily, and Orders taken at No. 26, Gower-place, University College, London.

ORNAMENTAL DESIGNS.—Remarks having been made by many Architects and other Gentlemen connected with the Ornamental Art, that, from want of ability, they have not been able to carry out (in the way they would wish) their designs in respect to Ornamental Modelling for the interior decorations of houses, metal works, &c., JAS LEIGH, of No. 15, South-row, New Road, near St. Pancras Church, begs to inform those gentlemen above-named, that he will be happy to execute any orders that he may be favoured with, he hopes in a satisfactory manner, and at a less cost than has hitherto been charged.—15, South-row, New Road.

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Caen Stone shipped direct to any port by Monsieur Foucard, at Caen.

CAEN SUFFERANCE WHARF, ROTHERHITHE.
LUARD and BEEDHAM beg to inform Architects, Surveyors, Builders, and others, that they have removed from Norway Wharf, Greenwich, the whole of their Caen Stone business, to the above extensive premises, where a large Stock will be kept up by continual fresh arrivals from their quarries at Allemange. Orders received at the wharf, and further particulars may be obtained of Mr. GEORGE GATES, 18, Southwark-square, Borough, London.
Orders shipped direct from Caen to any port.
The Waterman Steamboats call at Lavender-pier, adjoining Caen Wharf.

PIMLICO MARBLE AND STONE WORKS, BELGRAVE WHARF, PIMLICO-ROAD.
SAMUEL CUNDY begs to inform Architects and others, that GOTHIC WINDOWS, and every other branch of Stone-work, &c., are executed at the cheapest possible rate, and packed for the country ready for fixing or fixed, enabling ARCHITECTS to have the most difficult TRACERY for CHURCHES, or other buildings in the PROVINCES, executed under their immediate inspection in TOWN.
BUILDERS and MASONS can have every description of Stone in the London Market, either in the rough block, or cut to sizes from the saw, or prepared ready for fixing or fixed, avoiding either waste in the goods or carriage.
Box Chimney-pieces from 12s. upwards.
THE WORCESTER ENCAUSTIC TILES, in all their beautiful variety, may be inspected, in addition to the usual extensive stock of Chimney-pieces and FONTS.
Estimates given for building generally.

COMBE VALLEY SLATE COMPANY.—Capital 5,000l. in 1,000 Shares of 5l. each; deposit 1l. per Share.—Conducted on the Cost Book system. Offices, 5, Whitefriars Street, City.
The proprietors of this valuable undertaking, having after several months of persevering industry, now opened on, and cut through a large piece of rich blue rock, have great pleasure in informing the public, that their endeavours have been crowned with complete success. The Slate is of a most superior description, and suited to every purpose, that this material can be applied to. The management of the Company will be vested in the hands of Three Trustees and a Committee of thirteen persons, all practical men—merchants, and traders, or otherwise more or less engaged in the Slate Trade. It will be conducted on an entire new principle; one never yet attempted by any other Company. To Builders it will present one of great advantage, inasmuch, as every shareholder may become an agent for the sale of the produce of the quarry, and he will moreover be able to have manufactured in small quantities, any kind of goods he may require, and to any plan, with the same facility, as if it were executed under his own inspection in his own workshop. But no other than shareholders (at the price) can be expected to participate in those exclusive benefits. The quarry is situate in the parish of St. Ginner's, Cornwall, within 1 mile of the harbour of Cragington, on the Bristol Channel, it consists of 7 acres of land, all one entire bed of Slate 6 feet below the surface, and is held on a lease of 21 years, at the nominal rent of 10l. per annum, with no royalty.—Estimates carefully prepared, plans of the estate, sections of the workings—and specimens of the slate may be seen at the Office where also prospectuses may be obtained.—Application for shares can be made to Mr. JAMES LANE, 75, Old Broad Street, City; Mr. THOS. SANFORD, Exeter; Messrs. TYETH & LUSCOMBE, Plymouth; Mr. H. MANSELL, Guildford, Surrey; at the Office of the Builder; and at the Company's Office, of the secretary, CHAS. SAML. RICHARDSON.

PORTER'S CORRUGATED and PATENT GALVANIZED IRON ROOFING WORKS, Southwark-bridge (and the Grove), Southwark. At the above Works, the Public are secure in having the superior make, and by the Patent process of Galvanising Iron as first introduced into this Country, with many improvements in its application to Roofs, Buildings, &c. Every description of Building, Railway, and other Iron and Smith's work Manufactured of the best quality. Iron Fence and Hurdles as usual.—The Trade Supplied.

By Her Majesty's Royal Letters Patent.

MOREWOOD and ROGER'S PATENT GALVANIZED TINNED METAL.—This article was at first sold under the name of Galvanised Tin Plates, but the Patentees finding that the public, in some instances, overlooking the word Tin, confounded the article with Galvanised Iron, and that the character of their metal has thereby sustained injury, are desirous of giving it a name so distinctive as to prevent such mistakes, and consequent disappointment to purchasers in future. They therefore respectfully request purchasers to inquire for MOREWOOD and ROGER'S PATENT GALVANIZED TINNED IRON. In order to enable the public readily and at first sight to distinguish between the two metals, it may be well to inform them, that Galvanized Iron has a plain, zinc-like appearance, while M. and R.'s Patent Galvanized Tinned Iron has a smooth crystalline surface.
MOREWOOD and ROGER'S PATENT GALVANIZED TINNED IRON, Patronized by the Admiralty, and the Honourable Board of Ordnance, being extensively used in her Majesty's Dockyards, at the Tower, and elsewhere, for every variety of Roofing, and other purposes, where a strong, light, cheap, and durable material is required.
It has been found by experience that this article is beyond all comparison superior to zinc; possessing, as it does, all the advantages arising from the strength and firmness of iron, combined with perfect immunity from rust; whilst it is free from the very serious objection which applies to zinc, viz. its contraction and expansion, consequent upon every change of temperature, and from which circumstance leakage must of course result.
This material is not likely to be destroyed by fire, as is the case with zinc and lead, which melt and run down, thus freely admitting fresh air to the fire, and causing it to burn more fiercely. It is therefore obviously well adapted for all the purposes above-named, and most importantly so, when there is the possibility of fire. It is also peculiarly suitable for chimney-tops, gutters, spouting, and out-door work generally, possessing the strength of iron, without its liability to corrosion. It is by far the most economical metal roofing that can be obtained, in consequence of its strength, as it may be laid without boards, and upon the lightest rafters.
This mode of preserving metal from rust does not only apply to sheet-iron, but also to manufactured iron in any form, as bolts, nuts, hinges, nails, &c. &c.
For full Particulars apply to S. HOLLAND, 34, Gracechurch-street.

TO PLASTERERS.
LIME FOR PLASTERING, that may be used immediately without risk of blistering, manufactured expressly for Plastering, and sold at the usual price, at FORREST'S WHARF, Earl-street, Blackfriars. Sheds for the slacking and mixing of lime. Accommodation for loading and landing bricks, sand, ballast, &c.

TO THE CONSUMERS OF THAMES SAND, AND THE TRADE IN GENERAL.
JOHN DOWNEY, Licensed Lighterman, &c. &c., of 11, Millbank-row, begs most respectfully to inform his customers and friends in the trade, that he has purchased of Mr. WILLIAM COOPER, of Westminster, his two sand-getting craft and business. JOHN DOWNEY, being now owner of four sand barges, can promise a supply of good sand with punctuality and dispatch.

FIRE BRICKS.—WARD & HART, Honduras Wharf, Bankside, Manufacturers and Exporters of every sort of Fire Bricks, Lumps, Tiles, Clay, &c. Builders, Gas Companies, Engineers, Shippers, and all large buyers, supplied from ships from the Manufactories direct, at the lowest prices. A large Stock of every quality always on hand at the Wharf as above. Goods made to pattern at a short notice. Patent Corn Drying Malting Tiles. Lime, Sand, Gravel, Bricks, and Tiles, of every description.

TO BUILDERS.
W. W. RAWLINS, Lime Wharf, King's-road-bridge, Camden New Town, begs respectfully to inform Builders and others, that he continues to supply Grey Stone and Chalk Lime, Blue Lias Lime, Roman Cement, Plaster of Paris, Plasterers' Hair, Thames Ballast, Sand, Tiles, Cement, Chimney-pots, Welch Goods, and all kinds of Building Materials, this being the nearest Lime Wharf to the North of London. Yorkshire Paving Slabs, Sinks, &c.; Thames Ballast and Sand delivered per Barge, in the river, or on any part of the Regent Canal.

CHEAP ROMAN CEMENT is sold in Casks that will not contain Five Bushels, even by some manufacturers of a very respectable name. Consumers should see that the standard size cask is 29 inches long by 17½ across the head, outside measure. Any workman with a rule in his pocket can ascertain this.

ATKINSON'S CEMENT.—WILLIAM WOOD, Jun., Manufacturer of Roman, Portland, and Bath Cement, Blue and White Lias Lime Works, CHURCH STREET, ROTHERHITHE, London, Sole Consignee of Atkinson's Cement.

PORTLAND CEMENT.—The peculiar property which this Cement possesses, of entirely resisting the action of frost, renders it the only safe Cement to use at this season for exterior work, either in bricklaying or plastering. Satisfactory proof of the fact can be furnished by the manufacturers.—J. B. WHITE and SONS, Millbank-street, Westminster.

KEENE'S PATENT MARBLE CEMENT forms an exceedingly hard and indestructible Stucco, which may either be prepared for paint, or finished in imitation of stone, by the addition of Portland or other stone dust.
It is a cheap and efficient substitute in place of wood for skirting, architrave, and other mouldings, in its application for which purposes it checks the progress of Fire and the attacks of Vermin.
Patentees and sole Manufacturers, J. B. WHITE and SONS, Millbank-street, Westminster, and Seel-street, Liverpool

GREAVES'S BLUE LIAS LIME and CEMENT.—Engineers, Architects, Contractors, &c., are respectfully informed, that the above articles can be supplied by the following agents, viz.—Messrs. Rutty and Verey, No. 2, South Wharf, Paddington; Mr. J. Thompson, back King-street, Manchester; Mr. T. Wylie, 56, Gloucester-street, Liverpool; Mr. J. Harrison, Linen Hall-street, Chester; Mr. J. Benehill, Broad-street, Birmingham; Mr. E. Cryer, Canal Wharf, Oxford; or by R. GREAVES'S boats, direct from the Works, at Southam, Warwickshire.
N.B. Ground Lias Lime for Concrete. Office, Stratford-on-Avon

MARTIN'S FIRE-PROOF AND ORNAMENTAL CEMENT.
CAUTION.—Messrs. STEVENS and SON, Patentees, beg to caution their friends and the trade generally against confounding this invaluable Cement with others, erroneously said to be of the same description. S. and S. pledge themselves that MARTIN'S CEMENT is totally dissimilar in composition and manufacture from every other, and being a neutral compound, is not only free from chemical agency upon any substance with which it may come in contact, but completely resists the action of the strongest acids. They feel it a duty to direct attention to the following properties, which it exclusively possesses:—
1. It rapidly acquires the hardness of stone.
2. Unlike other internal cements, its hardness is uniform throughout its entire thickness.
3. Its surface (which may be made equal to that of the finest marble) NEVER THROWS OUT ANY SALT, and will receive paint in four days, without peeling, when put upon dry work.
It is peculiarly adapted as an internal stucco for walls, skirtings, architraves, mouldings, and enrichments of all kinds, to all of which purposes it has been extensively applied by Mr. Thomas Cubitt, on the Grosvenor estate, &c.
For the above purposes, it possesses great advantages over wood, being more economical and durable, resisting fire, damp, and vermin.
For the floors of halls and fire-proof warehouses, its lightness, durability, and uniform surface give it an immense advantage over stone, being, at the same time, much more economical. The most satisfactory references can be given. To be had of the Patentees, Plaster of Paris and Cement Manufacturers, 186, DRURY LANE.
Agent for Liverpool and Manchester, Mr. R. PART, 28, Canning-place, Liverpool.

TO ARCHITECTS, ENGINEERS, CONTRACTORS, BUILDERS, MASONS, AND PLASTERERS, MERCHANTS, SHIPPERS, AND THE PUBLIC IN GENERAL.
JOHN'S and CO.'S PATENT STUCCO CEMENT.—The following are the positive advantages possessed by this Invention over every Cement hitherto introduced:—
It will effectually resist Damp. It will never vegetate, nor turn green, nor otherwise discolour. It will never crack, blister, nor peel off. It will form a complete Stone casing to any Building covered with it. It so closely resembles Stone that it is impossible to detect it. It never requires either to be painted or coloured. It will keep fresh and good in the cask, in any Climate, for any number of years. It is the only Cement that can be depended upon for export. It is the only Cement that can be used with confidence by the Sea-side. It may be used in the hottest or coldest Climates at any season. It will adhere to any substance, even to Wood, Iron, or Glass. It will carry a larger Proportion of Sand than any other Cement. It matures by age, and becomes perfect when other Cements begin to perish. It may be worked through the Winter, as frost has no effect upon it. It may be used on the Inner Walls of new Houses, which may be papered over or painted directly. Roofs laid or pointed with this Cement will remain undamaged by the severest Storms. Any Plasterer may apply it, the Instructions for use being very clear and distinct. The first cost of this material does not exceed that of the cheapest Cement now in use; but with all the above-named extraordinary and valuable advantages, nothing can approach it in point of economy.
Architects and Builders who have used this Cement have declared that it requires only to be known to be universally preferred.
Specimens may be seen, and a Prospectus fully describing the Cement, and its mode of application, together with a volume of Testimonials from every part of the Kingdom, may be obtained on application at the office of "The Builder," and of MANN and CO., SOLE AGENTS for the Patentees, 5, Maiden-lane, Queen-street, Cheapside, London; of whom also may be had.
JOHN'S and CO.'S PATENT STONE-COLOUR STUCCO PAINT, expressly intended for Painting over exterior Walls of Houses that have been covered with Roman or other Cements, and which have become dirty and discoloured. It is in every way better suited for this purpose than White Lead Paint, which will frequently come off in flakes, being in direct chemical opposition with Cement; whereas MESSRS. JOHN'S and CO.'S PATENT PAINT having an affinity for Stucco, binds itself with it, stopping the action, thereby rendering the wall proof against weather, and in the finish producing a pure stone-like effect, producable by no other Paint whatever. It is cheap in its application,—and may be used by any Painter, in any climate, even in the most exposed Marine situations.